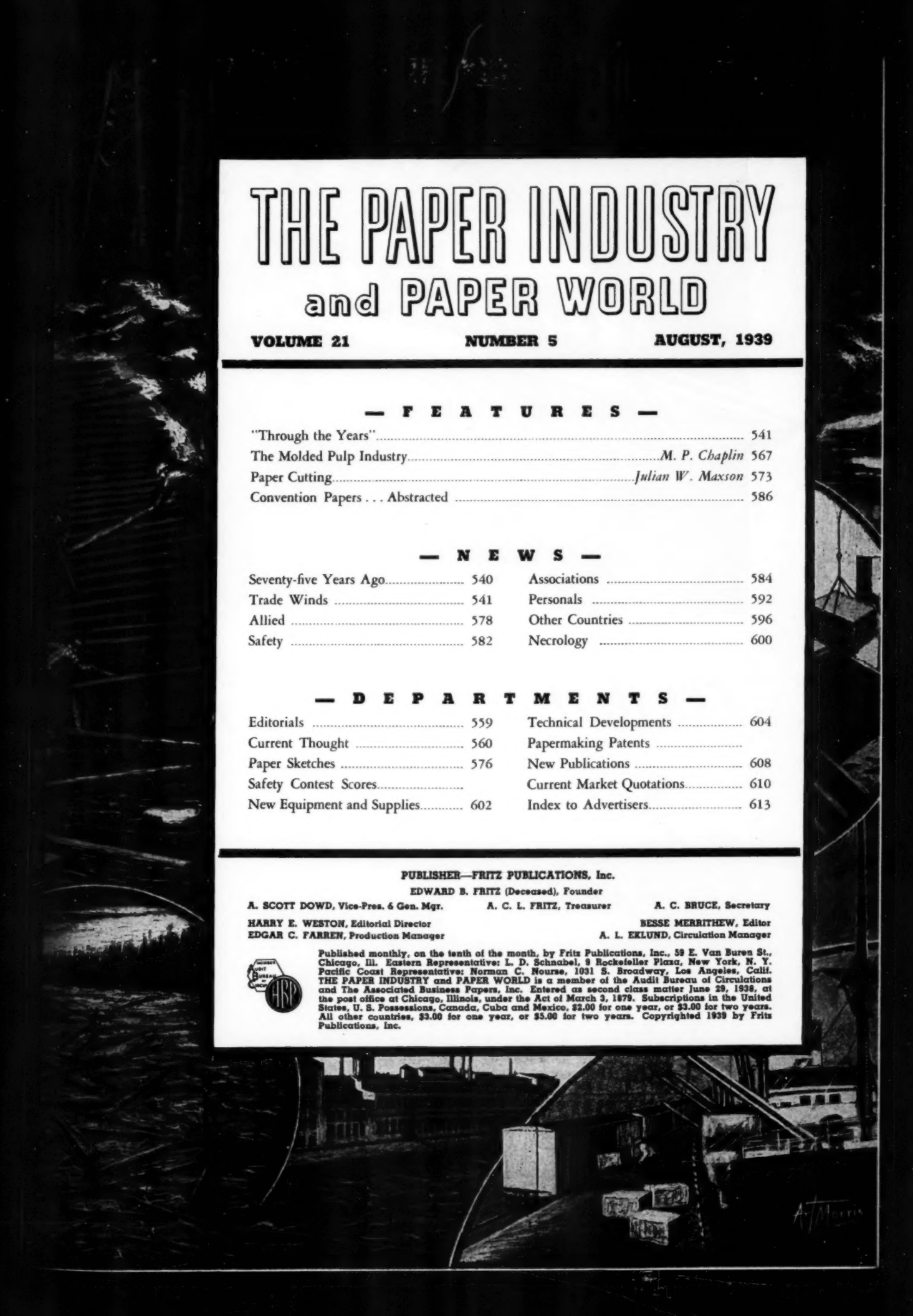

THE PAPER INDUSTRY and PAPER WORLD

VOLUME 21 **NUMBER 5** **AUGUST, 1939**

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PUBLISHER—FRITZ PUBLICATIONS, Inc.

EDWARD B. FRITZ (Deceased), Founder

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Published monthly, on the tenth of the month, by Fritz Publications, Inc., 59 E. Van Buren St., Chicago, Ill. Eastern Representative: L. D. Schnabel, 9 Rockefeller Plaza, New York, N. Y. Pacific Coast Representative: Norman C. Nourse, 1031 S. Broadway, Los Angeles, Calif. THE PAPER INDUSTRY and PAPER WORLD is a member of the Audit Bureau of Circulations and The Associated Business Papers, Inc. Entered as second class matter June 29, 1938, at the post office at Chicago, Illinois, under the Act of March 3, 1879. Subscriptions in the United States, U. S. Possessions, Canada, Cuba and Mexico, $2.00 for one year, or $3.00 for two years. All other countries, $3.00 for one year, or $5.00 for two years. **Copyrighted 1939 by Fritz Publications, Inc.**

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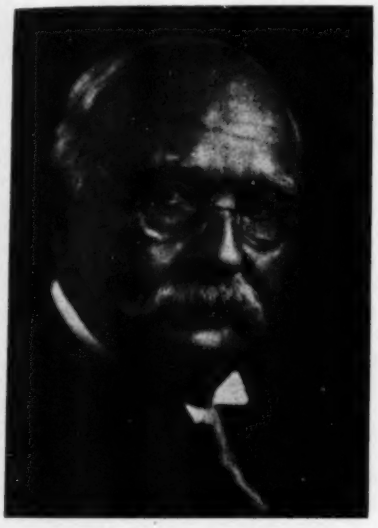
TRADE WINDS



Robert Gair, Founder

"Through the Years"

1864 - 1939

▸▸▸ DURING THE PAST CENTURY many great inventions and discoveries have come into use which today are considered a part of our industrial and scientific world. In commemoration of the opening of A Century of Progress Exposition in Chicago in 1933 *The Paper Industry* carried an article on page 64 of the May, 1933, issue, entitled "One Hundred Years of Progress." This article recalled the fact that machine-made paper was first made in this country a little over a hundred years previous to that time. One outstanding development in the industry was the establishment of the wood pulp industry. The first soda pulp mill was established in 1854 followed by the establishment of a groundwood mill in 1867, a sulphite mill in about 1883 and the sulphate mill in 1909.

Many other developments have been recorded during this period, among them the establishment of a paper company which, from humble beginnings on a small street in New York City, has grown to a large corporation with an extensive number of plants both in the United States and Canada. July 7, 1939, marked the seventy-fifth anniversary of Robert Gair Company, Inc. In commemoration of this anniversary of the company, a pioneer in the scientific development of the paperboard industry, a history of the firm and of its founder, Robert Gair, has been compiled by Wilbur F. Howell, secretary of the company. The publication, entitled *Through the Years,* accurately records the remarkable growth and development of the Robert Gair Company, Inc.

Captain Robert Gair was mustered out of the Union Army on May 31, 1864. Sixty days later he established himself in business in leased quarters at 143 Reade Street, New York City, as a paper jobber, handling various kinds of paper for retail merchants. Among the early customers was the firm of Law and Mitchell, another paper jobbing house. When it failed, George West, the largest creditor stated that he would agree to let the company try to work out its difficulties if Robert Gair was given control. This, then, was the start of manufacturing by the Gair Company. Mr. Gair paid off all the debts of Law and Mitchell and practically repaid the original investment, although not legally responsible for this sum. In 1867, he became associated with George West under the name of Gair and West. The Gair and West partnership was dissolved after a few years and from then until 1903, when the company incorporated, the business was carried on under the name of Robert Gair.

Air view of the Robert Gair Company's Piermont (New York) plant, one of its largest units.

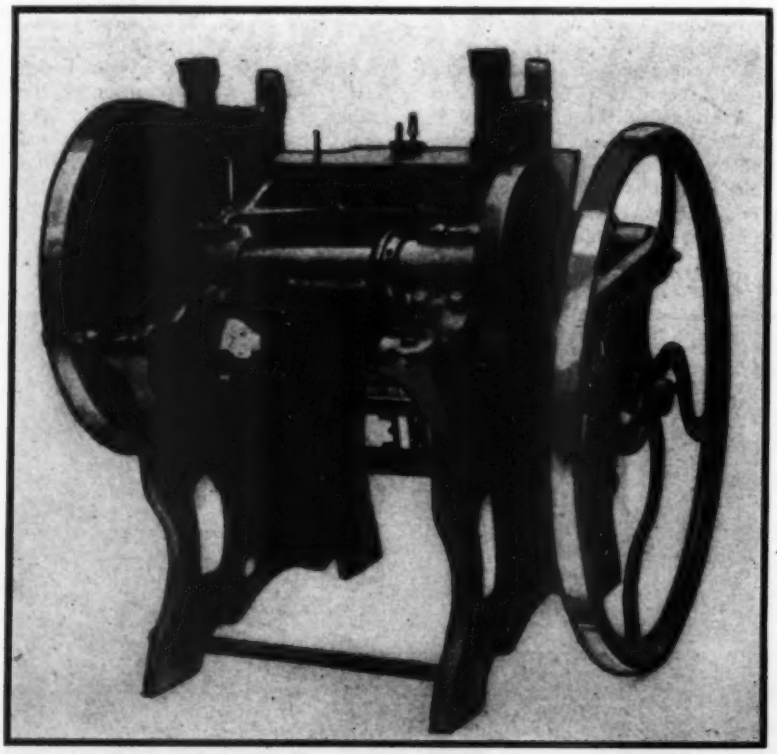
▶▶▶ Year after year the business grew —the lines of merchandise expanded and on a four-page leaflet issued January 1, 1871, there were listed such items, as paper bags, satchel bottom parchment sacks, cotton sacks, etc. On the leaflet, Robert Gair's business is defined as "plain and ornamental job printer." The cover of a catalogue of October 1, 1878, shows that he occupied the premises of both 143 Reade Street and 161 Chambers Street—proof of the steady growth of the business.

Finally, after more and more items were added to the Gair line and new additional equipment and machinery were installed, the Gair plant expanded from the original two floors on Reade Street to the entire building at that address, and later, ownership of all of 141 and 143 Reade Street, 161-163 Chambers Street and occupancy under lease of part of 165 Chambers Street. From the flagstaff floated the flag, "Metropolitan Paper Bag Company," an indication of the paper bag activities.

It was during this New York period that Mr. Gair made certain machines for the manufacture of corrugated paper and it was in New York that he evolved the principle of cutting and creasing folding cartons in a single machine operation, which made mass production of folding cartons at low cost possible. While the invention of these things was conceived in New York, their practical application did not gain momentum until the establishment of the Gair plant in Brooklyn.

In 1888, the Gair plant was moved to the Brooklyn waterfront near the Brooklyn Bridge. There, the business expanded rapidly; building after building was erected, and Robert Gair's holdings and factories became a city within a city and was commonly called "Gairville." After many tests, Mr. Gair erected the first big multi-storied concrete factory building and this proved such a success that all subsequent buildings were made of the same material.

Some of the most interesting developments in the company's history occured during this period, during which time the manufacturers were confined to fabricated paper goods. It was during this time that the lines of manufacture were extended greatly and the motto of the company, "If It's Made of Paper We Have It" was justified. In addition to the regular line of folding cartons and shipping containers there were added, envelopes, bags, lace papers, chop frills, set-up boxes, labels, show cards, paper doilies, blotters, seals, calendars, etc. After 1910, it was evident that the most important lines were the folding cartons and the shipping cases and during the decade, 1910-1920, all other lines were sold. It was during the late 1890's that the branded product and advertising grew and the folding carton came into its own.



Press on which Mr. Gair experimented with his process of cutting and creasing folding cartons in one operation. Patent application was in process in 1879.

▶▶▶ Robert Gair began the manufacture of corrugated products during the latter part of the 19th century but volume did not appear until the settlement of the famous Pridham case in 1914 which led the railroads to use the material for shipping.

After the business increased in volume it became apparent that it was not economical to pay freight on paperboard from the mill to the plant and then from the plant to the customer and an arrangement was made to bring into the company, three large paperboard mills located at Piermont, New York; New London, Connecticut, and Haverhull, Massachusetts. In the late 1920's, the business and equipment of the Interstate Corrugated Box Company of Brooklyn was brought together with the business of the Warner Childs Company, Medford, Massachusetts. A paperboard plant at Tonawanda, New York, was also added. Since 1930, the organization has been rounded out in the United States by the acquisition of further fabricating units and the Canadian field has been entered. Robert Gair Company, Inc., now has plants at Bogata, New Jersey, Syracuse, New York; Newton Upper Falls, Massachusetts; Utica, New York; Holyoke, Massachusetts; Cleveland, Ohio, in addition to folding carton, container and paperboard plants in Toronto, Hamilton, London, Windsor, Montreal, Frankford and Campbellford, Canada.

▶▶▶ Since the time that Mr. Gair decided to go into the paper business, there have been many changes in design and construction of paper cartons and boxes. The pioneering tradition handed down by the shrewd and hard-working Mr. Gair has been kept intact by the present company. The research of its chemists and engineers goes on day in and day out to develop new products, new methods and new uses for paperboard. It is the company's policy to sell the merchandising ideas and, as is stated in *Through the Years*, "the orders take care of themselves."

It is a far cry from the days when the Gair letterheads quaintly listed their comparatively small number of items and the catalogues stated that Robert Gair could "turn out orders promptly" and that the goods "simply defies competition." These advertising pieces reflect, however, the driving power of Robert Gair himself. Not content with his mechanical ability, he had a flair for merchandising both his own products and those of his customers. Lewis

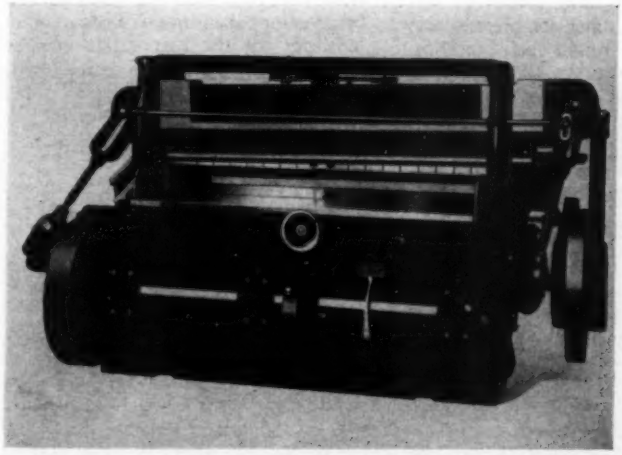
PROGRESS

has no Stop Light

. . . In line with progress, Pulp and Paper Mills can profitably accept the Precision Cutting of a

SEYBOLD

Mill Trimmer



Products by Seybold: Book Compressors • Book Trimmers • Cutting Machines • Drilling Machines • Knife Grinders • Die Presses • Round Corner Cutters • Stamping Presses • Wire Stitchers

★ Actually, there is no compromise in the forward surge of business. Evidence of success is everywhere. And in every instance of success there attends modern equipment and modern methods.

The Pulp and Paper Mill needs the profit advantages of a modern trimmer. Trimming is one of the final operations. Accuracy is paramount.

The Seybold Mill Trimmer not only assures accuracy in the splitting of piles, but gives volume production for greater profits.

★ **Sales and Service:**

- New York: E. P. Lawson Co., Inc. 426-438 W. 33rd Street
- Chicago: Chas. N. Stevens Co., Inc. 110-116 W. Harrison Street
- Atlanta, Ga.: Harris-Seybold-Potter Service Corporation, 120 Spring Street, N. W.
- Dayton: Seybold Factory
- San Francisco, Los Angeles, Seattle: Harry W. Brintnall Co.
- Toronto, Montreal: Harris-Seybold-Potter (Canada) Limited
- London, England: Smyth-Horne, Limited
- Latin America and West Indies: National Paper & Type Co., Inc.

SEYBOLD DIVISION • HARRIS-SEYBOLD-POTTER CO. • *Dayton, Ohio*

Pioneer Builders of Successful Cutting Equipment

Mumford has said: "Robert Gair was a figure; to understand him, to understand the industry he helped to create is to have a keener insight into the material force of modern civilization. More than any personality except that of Roebling, the creator of the Brooklyn Bridge, Robert Gair most certainly dominates the Brooklyn waterfront."

Today the Robert Gair Company, Inc., which has lived to see the paperboard production of the country rise from two thousand tons a year to over five million tons annually—and which has served many customers for over two generations—reflects, in no small way, the genius of its founder. Year by year, step by step, the Robert Gair Company has steadily kept pace with new developments and has created its own. It is as Robert Gair himself would have wanted it—had he lived "Through the Years."

◆

NEW COMPANY BUILDS MILL AT GLENS FALLS

A new plant for the manufacture of high grade bleached kraft, bleached sulphite, and groundwood by the Oxford and McGregor processes is now being built by the Adirondack Pulp and Paper Corporation, newly-formed organization at Glens Falls, New York. License to produce the above products was given by the American Industrial Company of Buffalo, New York.

The new corporation is headed by well-known local Glens Falls men. A tract of land has been purchased near the Imperial Wall Paper Color Company with ample spring water to take care of processing needs and it is expected that the first 30-ton unit will be in operation in about two months. The machinery has been ordered from the American Paper Machinery and Engineering Works. Ground was broken for the new plant on July 10.

◆

TRUCKERS FIGHT REDUCTIONS IN FREIGHT RATES

A hearing before Interstate Commerce Commissioner Trezise was held in Boston on July 17, at which time trucking company opponents of the proposed freight rate reductions on paper to Boston put in an appearance.

The proposal in question involved general reductions on less carloads as well as carload rates from a large number of paper mills on the Boston and Maine Central Railroads to Boston. The idea was to offset store-door truck delivery tariffs to a considerable extent. It is not known whether the examiner will submit a formal report on the matter or not. The proposal originated with the carriers themselves, rather than with the shippers, and was designed to win back a share of the traffic now moving over the highways. It was the first of a series of similar reductions proposed by the same railroads on a large list of commodities.

◆

LUFKIN MILL IS PROGRESSING WELL AHEAD OF SCHEDULE

At the twenty-fifth annual convention of the Texas Forestry Association, held in Nacogdoches, Texas, July 26, E. L. Kurth, president of the Southland Paper Mills, Inc., told the convention that the company's newsprint mill at Lufkin, Texas, is rapidly nearing completion. He said that the brickwork was 70 per cent complete, all steel in place, and work had begun on installing the boilers and some of the machinery. It now seems that the anticipation of starting production in December is well founded.

In the course of his remarks, Mr. Kurth advanced the theory that the manufacture of newsprint from slash pine would provide a new industry for the South. He believes at least fifty mills could be distributed throughout the South, which, of course, was the dream of the late Dr. Herty. One interesting statement was Mr. Kurth's prediction that within the next five years the Lufkin mill would be enlarged to three times its present size and eventually might be exporting paper to South America, a market now supplied by foreign mills.

◆

FORM MASONITE COMPANY OF CANADA, LTD.

The newly-incorporated Masonite Company of Canada, Ltd., has already started work on a new plant located at Gatineau, Quebec. The new Canadian enterprise will manufacture all the hard board products made by the Masonite Corporation in the United States, including Presdwood, standard and tempered Temprtile, special concrete form board, Century of Progress flooring, Quartrboard and deluxe Quartrboard.

The Masonite Company of Canada, Ltd., came into existence as a result of the collaboration of the Canadian International Paper Company and Masonite Corporation of the United States. Primary distribution of the products of the new plant will be through two selling agencies which are now selling the products produced by the United States plant—International Fibre Board Ltd., and the Donnacona Paper Company.

S. L. de Carteret, vice president of the Canadian International Paper Company, Montreal, is president of the Masonite Corporation; R. G. Wallace, vice president of the American organization of Masonite, is also vice president of the Canadian company; R. L. Campbell is secretary, and F. A. Laird is treasurer. The company has its head office in Montreal.

The erection of the plant at Gatineau offers peculiar advantages from the standpoint of shipment and better service; and from the standpoint of better production, the services and facilities of the closely-adjacent plant of the Canadian International Paper Company.

◆

MAJOR CHANGES AT CONTAINER CORP. PLANTS

The Container Corporation, Chicago, advises that on July 1, its properties were divided into four divisions, each with a senior executive in charge.

First—The Philadelphia plant with all of its various departments will be directed both as to sales and operations by John J. Brossard. The Natick plant will have as its local general manager, George LeBlanc, who in turn will come under the supervision of Mr. Brossard. Both Mr. Neil and Mr. Thomas will be given opportunities to work in other localities for the corporation but, so far, nothing has been definitized as yet. James W. Kane has been transferred to Philadelphia as the head of the operating division at Philadelphia directly under Mr. Brossard's supervision. The vacancy created by Mr. Neil's transfer will not be filled as with Mr. Brossard permanently at Philadelphia, he will have the necessary time and opportunity to supervise the present departmental sales managers of containers, folding cartons and boxboard.

Second—The Coated Board, 35th Street and Wabash plants, Chicago, will be under the direct supervision of Wesley M. Dixon who will be in full charge of both operations and sales of all these three properties. There are no other organization changes or transfers contemplated at the present time at any of these plants which represent the western boxboard and folding carton operations of the corporation.

Third—The western plants, which produce containers or the strawboard, liner and chip board used in the manufacture of containers, consisting of Ogden, Anderson, Cincinnati, Circleville,

Quick Link

BETWEEN INVESTMENT AND RETURN

SPEED → → → through Grinnell prefabricated assemblies . . . cuts down the time between your investment and the day that steam begins to flow at a profit . . . makes certain that schedules will be met. Carefully engineered, accurate sub-assemblies are quickly, easily and economically field-welded into a finished piping system – saving weeks over a "field-built" job.

The experience of Grinnell assures correct interpretation of ideas and plans, pre-testing to qualify for insurance – construction to standards commercially practical and technically sound. Plant facilities enable Grinnell to serve any part of the continent quickly. Follow the lead of hundreds of engineers and "Give the plans to Grinnell." Grinnell Company, Inc., Executive Offices, Providence, Rhode Island. Branch offices in principal cities of U. S. and Canada.

PREFABRICATION BY

GRINNELL

WHENEVER **PIPING** IS INVOLVED

Unique header recently completed by Grinnell as part of large power piping installation

Carthage, and Cleveland, will be under the direct supervision of Ira C. Keller in full charge of both operations and sales of these properties. Norbert Cochran has replaced Mr. Ekins, resigned, as manager of Circleville. Mr. Kane will not be replaced in his former western duties. No other organization changes are planned in any of these properties.

Fourth—The pulp mill at Fernandina, Florida, will come under the direct charge of J. V. Spachner, both as regards operations and sales. Mr. Spachner will continue the other responsibilities he now has in connection with the paper stock subsidiaries, purchasing and traffic divisions. Mr. Cochran will not be replaced at Fernandina.

◆

SUSPEND FREIGHT RATE REDUCTIONS

The proposed reduction in wood pulp freight rates from the East coast ports to mills in the southern peninsula of Michigan and in Ohio, was suspended upon protest of the New England Paper and Pulp Traffic Association. The proposed cut would have amounted to 2 cents a hundred pounds, or 40 cents a net ton. It was aimed to recover some of the tonnage lost to direct shipments by steamer from Scandinavian countries to Great Lakes ports.

The suspension was effective until February 3, unless otherwise altered in the interim. Meantime, however, the carriers have asked permission of the ICC to withdraw their original proposal which puts the matter back where it was originally. The belief is strong, however, that a new sort of proposal will probably emanate from the carriers before long.

◆

FINANCIAL

THE manner in which consumer demand is keeping up the output of the paper mills is showing in the financial reports of the various companies, even though a markedly high production has been accompanied by unsatisfactory prices. That the abnormal condition of heavy demand, coupled with price reductions, can long continue, seems hardly likely.

Champion Paper and Fibre Company—Net profit for the year to April 30 was $446,684, as against $1,557,439 for the same period of 1938.

Container Corporation — Earnings for the first half of the year were $32,249, compared to a net loss of $120,251 in the same period of 1938.

Construction was proceeding rapidly on the new plant of the Kieckhefer Container Company at Manitowoc, Wisconsin, when this picture was taken recently. Hamann Construction Company, local contractors, are in charge of the work.

Crown Zellerbach Corporation—Net profit for the year to April 30 was $5,015,390, compared with $6,211,414 for the same period of 1938.

Eastern Corporation — Net income for the March quarter was $36,949, as against $50,526 for the same quarter of 1938.

Hummel-Ross Fibre Corporation—Net profit for the six months to June 30 was $48,470, compared with $49,418 for the same period of 1938.

Johns-Manville Corporation — Net income for the quarter ending June 30 was $1,078,626, as compared with $214,578 for the same period of 1938.

Kimberly-Clark Corporation — Net profit for the year ending June 30 was $1,549,251, as compared with $1,553,460 for the preceding fiscal year. However, the improved trend of business is shown by the fact that one-third of the year's profits were earned in the final quarter of the fiscal year.

Marathon Paper Mills Company — Bonds totaling $1,750,000 are being called for redemption, funds being provided by a new issue at a lower interest rate.

Mead Corporation—Profit for the twenty-four weeks to June 17 was $157,219, as compared with profit of $217,459 in the same period of 1938. The second quarter showed an increase in profit compared with the first quarter.

Mosinee Paper Mills Company—reports a loss for the year ending May 31 of $212,229, as compared with profit of $42,639 for the preceding year.

Rayonier, Incorporated—Net profit for the year to April 30 was $1,176,647, as compared with $3,124,703 for the same period of 1938.

Scott Paper Company—Convertible debenture bonds, bearing interest of 3¾ per cent will be redeemed to a total par value of $500,000 on September 1 at a premium of 5 per cent over par. On July 1 there was outstanding only $1,662,000 of the original $4,000,000 issue. Most of the bonds previously retired were converted into common stock at the rate of 25 shares for each $1,000 bond.

Soundview Pulp Company—Net income for the six months ending June 30 was $132,382, as against $307,972 for the same period of 1938.

Sutherland Paper Company—Earnings for the first six months of 1939 were $258,918, as compared with $391,506 for the same period of 1938.

S. D. Warren Company—Earnings for the six months ending June 30 increased to $139,885 from the earnings of $88,115 reported for the same period of 1938.

Whitaker Paper Company — Net profit for the first half of the year was $70,334, as compared with $60,335 for the first half of 1938.

◆

TO PROSECUTE CAN. PAPERBOARD MFRS.

Prosecution of an alleged combine of paperboard container manufacturers in Canada is to be undertaken by J. J. McRuer who has been appointed to the task by Dominion Labor Minister Rogers. Ontario Attorney-General Gordon Conant announced, in connection with the case, that the province would not initiate any prosecutions for reasons which included the proceedings to be instituted and carried out by the Dominion authorities and the fact that the alleged combine operated in several provinces. Offices of the container association are in Toronto and most of its members are in Ontario.

WASHINGTON

▶▶▶ AS A RESULT OF the continued protests of American pulp producers against the dumping of Scandinavian pulp in the American market, Senator Borah of Idaho has introduced a resolution calling for a detailed investigation by the United States Tariff Commission of the effects of foreign competition on American production.

▶▶▶ THE INTERSTATE COMMERCE COMMISSION has suspended until February 3, 1940 the proposed 40 per cent reduction in rates on intercoastal and imported pulp from north Atlantic ports to middle western paper producing regions, the action being based on the complaint of New England producers who object to then the present differential in favor of imported pulp as against the domestic product.

▶▶▶ THOUGH CERTAIN EXEMPTIONS for the pulpwood logging and peeling trade of the northeast and other sections were granted by the administrator of the Wage-Hour Act, congressmen from Maine are not satisfied, it is reported, and are striving to amend the law to specifically exempt logging from the hours provision of the act. The amendment was written by Representative Clyde H. Smith (Maine) and stands a good chance of approval despite the objection of Representative Mary T. Norton, House Labor Committee Chairman.

▶▶▶ L. METCALFE WALLING, in charge of enforcement of the Walsh-Healey Act as to wages and hours on public contracts has denied the protest of the paper industry against requiring the wages and hours provisions of the Act to be applied to workers in the paper stock departments of paper mills, even though the bulk of such work is done on private contracts. It is held that the provisions of the act are applicable to all departments of any integrated plant which at any stage of the manufacturing process may perform work on goods to be delivered to the Government. The ruling was made on a specific protest of the Jessup & Moore Paper Company.

◆

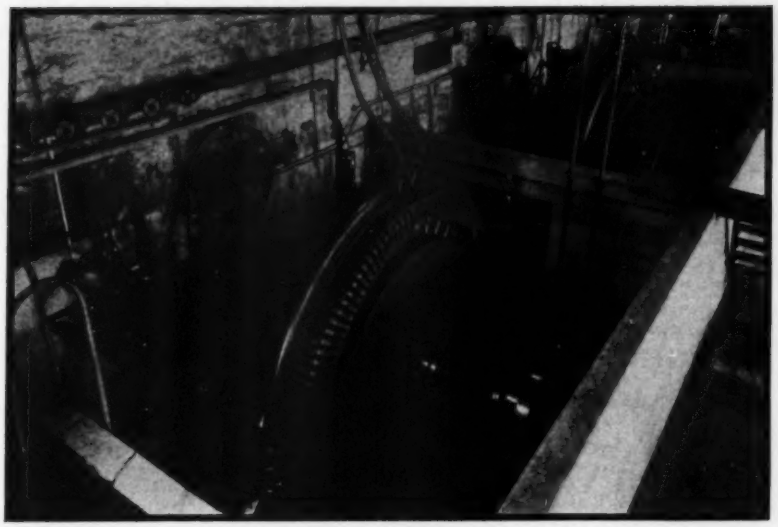
NEW ENGLAND PULP NEWS

THE most cheerful news in months was reported in New England recently when it was learned that some sulphite pulp mills had boosted production to 6½ days weekly on heavier demand and specifying of shipments against contract. Under such circumstances, producers cannot be blamed for their confidence that the worst is over and that the current $50 dock equivalent price basis on bleached sulphite represents the ultimate low in the current recession. Commenting on the recent failure of the railroads to put through their cut on port rates to the interior on import and intercoastal wood pulp, domestic producers in the east point out that the carriers are no doubt motivated by the increasing movement of sizeable cargoes by the all-water rate to lake ports. Two recent cargoes of Norwegian pulp were booked for shipment in this way.

The reported investigation of pulp imports, with particular reference to Canadian imports, was greeted with a smile by some New England converting mills, who pointed out that they were paying $55 dock equivalent for some Canadian types of bleached kraft and $35 for some superior Canadian krafts, which compares with Southern U. S. kraft as low as $28 dock equivalent in the north and domestic bleached kraft as low as $50 per ton delivered.

Port stocks in the northeast are definitely on the wane and a buying movement of genuine proportions is anticipated in the early fall. Currently many importers are asking $2 more per ton for both sulphite and kraft for shipment after January 1, 1940, than for either spot or last half of 1939 shipment.

Efforts to enhance the movement of import and intercoastal wood pulp through the Port of Boston, are expected in some sources, possibly with the aid of the new agency that controls operation of the Boston Army Base. Only at Mystic Terminal Piers are storage rates on pulp compatible with those at other ports and congestion at those docks have caused embargoes to be placed against importation unless pulp was loaded to cars or trucks and



These two new generators recently put into full operation in the Port Edwards, Wisconsin, mill of the Nekoosa-Edwards Paper Company, will increase the hydroelectric capacity over 10 per cent, generating 7,500,000 kw.h. annually.

NEPCO ADDS TWO NEW GENERATORS

Hydroelectric power capacity at the Nekoosa-Edwards Paper Company, which operates large mills at Port Edwards and Nekoosa, Wisconsin, has been increased over 10 per cent by changing two 850-hp. Leffel horizontal water wheels from driving pulp grinders to turning two 800 kv.-a. generators. This is part of a long-range program to speed up and increase production at Nepco.

Two new generators added are Westinghouse kv.-a. 480 volt models, of exceptionally heavy design and exactly fitted to Nepco's water wheels both in capacity and speed. They are expected to be an important factor in the new system of production which the mill's engineers are now bringing close to realization.

The two units together add 7,500,000 kw.-h., or over 10 per cent, to Nepco's hydroelectric capacity, according to Chief Engineer E. P. Gleason. Carl Olson, who has been with the company for many years, has direct charge of their operation and maintenance.

Other improvements and additions to the equipment at the Port Edwards and Nekoosa mills are contemplated for the immediate future, according to company officials.

shipped out within free time limits, usually before the vessels sailed.

Albany, New York, by assiduous advertisement and development work has built its pulp business up from small beginnings until today it is one of the major points of importation along the Atlantic coast. Boston has the advantage of an unusually large number of converting mills within a short haul of the port, besides differential freight lines to the west over the C. P. R. or the C. N. Railways.

◆

A "NEW WRINKLE"

With the completion of final details relative to the successful application of wrinkle finishes to flexible materials, including paper, New Wrinkle, Inc., Dayton, Ohio, has appointed Taunton Coating Mills, Inc., of Taunton, Massachusetts, as licensee for the manufacture and use of Wrinkle Finishes.

The Wrinkle finishing of fabrics, leather, and paper lends a new set of possibilities to the trades converting flexible materials into finished products. It is claimed that Wrinkle finishing is economical and has a striking appearance and a wide range of colors suitable for the new sales appeals constantly being sought by the manufacturer of merchandise from flexible materials.

In addition to the Taunton company, it is also reported that the Paraffine Companies, Inc., of San Francisco, and the Buckeye Paint and Varnish Company of Toledo, Ohio, have been appointed licensees for the manufacture of Wrinkle Finishes. Norway, Sweden, and Finland will be covered for New Wrinkle, Inc., by Aktiebolaget William Becker, Stockholm, Sweden.

◆

INDICT SEVEN PACIFIC COAST PAPER COMPANIES

An indictment against seven pulp and paper companies was returned by a special federal grand jury in San Francisco on July 12 charging violations of the anti-trust laws in connection with the manufacture and distribution of newsprint paper on the Pacific coast. Fifteen individuals were named in the indictment and three Canadian corporations were named among the seven firms included in the indictment.

The Government charged violation of the Sherman anti-trust act, alleging the defendants entered into an unlawful combination and conspiracy in interstate and foreign commerce to fix prices for newsprint. The Government charged that the Canadian companies entered into a combination and conspiracy with American manufacturers to fix prices for newsprint in the United States.

The companies indicted were: The Crown Zellerbach Paper Corporation, San Francisco, and its subsidiary, the Zellerbach Paper Company, also of San Francisco; Pacific Mills, Ltd., Vancouver, B. C., another C-Z subsidiary; The Powell River Company, Ltd., Vancouver; the Powell River Sales Company, Ltd., Vancouver; the Hawley Pulp and Paper Company, Portland, Oregon, and the Inland Empire Paper Company, Millwood, Washington.

Immediate steps to stop dumping of foreign wood pulp in the United States was urged by Senator Louis Schwellenbach. Senator Schwellenbach said that bleached sulphite was being sold at the Atlantic seaboard as low as $42 a short ton and unbleached at $32 which was below cost of production in the United States.

◆

HOLYOKE MILLS CLOSE FOR REPAIRS

Paper mills in Holyoke, Massachusetts, were closed down from July 28 until the 31st, owing to the annual shutdown of the canal system in that city for repairs. Every year, the Holyoke Water Power Company draws all of the water from the canals and necessary work is made during the week-end period. The mills were forced to operate on a limited scale during the severe drought period that has affected all of New England. The Connecticut River furnishes water for the canal system and the water level became so low that a complete shutdown was imminent. Scattered thunder showers and the shutdown relieved the condition to some extent, averting a complete closing.

◆

JAPAN CURTAILS PULP PURCHASES

The sharp decrease in paper base stocks exports noted in April was attributed mainly to the curtailed purchases of bleached and unbleached sulphite wood pulp by Japan, it was reported recently by the Forest Products Division of the Department of Commerce. The restricted purchases by Japan was said to be in line with the recently-inaugurated policy of that country to be independent of imports of all wood pulp by 1942, it was said.

Figures show that exports of paper base stocks from the United States during April, 1939, valued at $380,260, were 69 per cent below the value of exports during April, 1938, and that exports of paper and paper manufactures during April, valued at $2,388,125 were 5 per cent lower than the value of such foreign shipments in April a year ago.

Writing paper led all classes of paper exports from the United States during the first four months of the current year. Foreign shipments of this commodity during the first four months amounted to 9,364,852 pounds, valued at $641,884 and were 5 per cent higher than the quantity exported during the corresponding period of 1938, statistics show.

◆

MASS. STUDIES UNEMPLOYMENT COMPENSATION

Co-operating with the State of Massachusetts in formulating a new law for unemployment compensation based on experience ratings, is a voluntary group of New England industrialists and merchants, including several paper manufacturers, known as the Massachusetts Unemployment Insurance Compensation Committee.

Thus far, only Wisconsin has such a rating basis and its experience, while helpful to the committee, could not be written into the Bay State's law in toto. The plan is to devise a system providing that 60 per cent of the existing funds should be placed immediately to the individual contributors, based on amounts paid in. The remaining 40 per cent would be held as a general reserve for all companies and would, it is estimated, take care of all companies based on present experience in the worst years. If the general reserve fund exceeded an amount to be determined, the surplus would made available for increasing the rate of compensation. There would be no employee contributions.

Several conferences were held and a law is now in process of formulation. An experience rating would begin with $28,000,000 in the reserve fund and $42,000,000 set aside for individual accounts. Such a system, it is stated, would permit reduction in payments, besides providing a more stable reserve and would even provide benefits on present experience for a period of 10 years for persons unemployed for reasons beyond their control.

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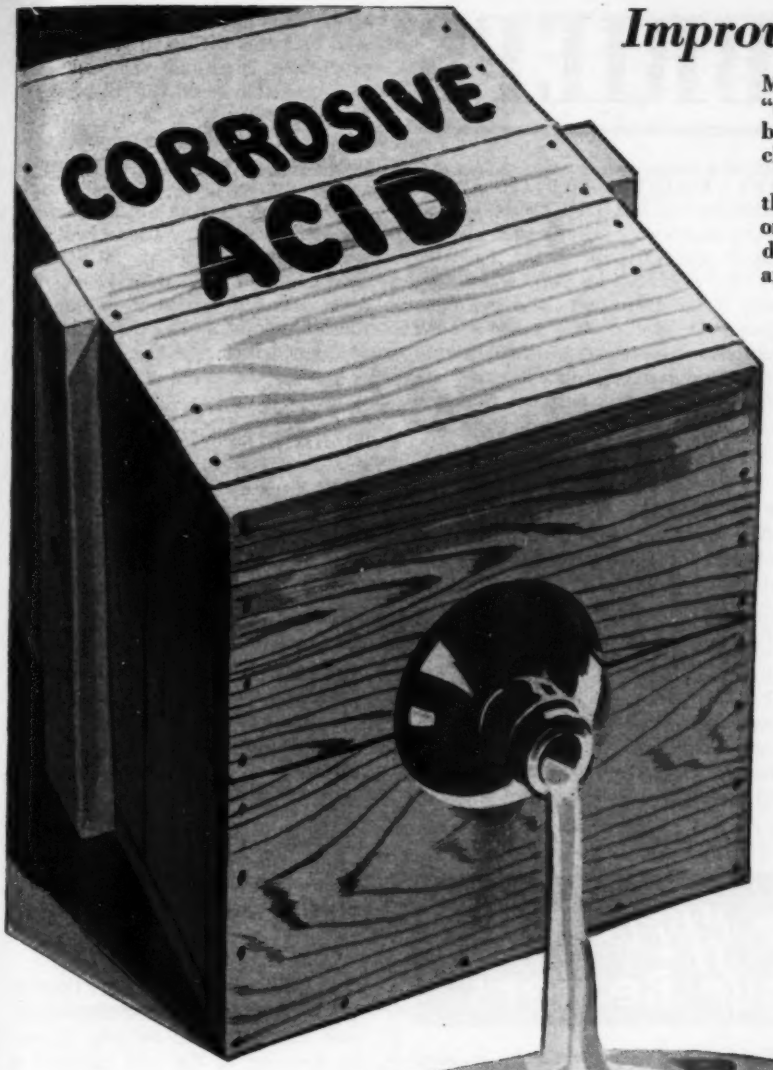
▶▶▶ SIXTY-FOUR GOLFERS are competing in the four flights in the eleventh annual Kimberly-Clark Corporation golf tournament being held at Ridgeway Golf Club in Neenah, Wisconsin. The tournament is being directed by John Farmakes.



Improved acid resistance

Many a corrosive solution classified as a "tough customer" becomes much better behaved . . . when Tellurium Lead takes charge.

This claim is not based on something that happened in a test tube. It is founded on *user reports* from many different industries—from plants handling sulphuric and other corrosive acids under conditions of extreme severity, even at temperatures that approach the melting point of the metal. In case after case, Tellurium Lead has prolonged the life of equipment and reduced the number of shut-downs for repairs.

Another highly important property of Tellurium Lead is this: *It toughens under stress.* When rolled, stretched or hammered, it actually becomes stronger. As a result, turnover points and joints are less subject to cracking. Furthermore, where vibration occurs, this capacity to develop latent strength minimizes buckling and creeping. It also gives Tellurium Lead improved resistance to fracture due to repeated heat changes.

Tellurium Lead of our manufacture is time-tested St. Joe chemical lead alloyed with a small quantity of tellurium. It gives the advantages of this well-known chemical lead plus important new ones. Yet now it costs only a fraction of a cent more per pound than chemical lead. Available in sheets, pipe and coils. For further facts, write our nearest branch.

Typical User Reports

"1¼" x 6 lbs. Tellurium Lead coils is used in a bath of 10 to 20% sulphuric acid and water with a steam pressure of 5 to 15 lbs. and a temperature of 170° F. Tellurium Lead has not shown any signs of oxidation after four or five times the length of service of lead formerly used."

• • •

"We have been using Tellurium Lead in steam injector pipes for acid service," another user reports. "We find that the material has a distinct advantage over lead formerly used. It gives the added rigidity and resistance to deformation needed under the conditions present."

I THOUGHT I WAS TOUGH . . . TILL I MET

TELLURIUM LEAD

NATIONAL LEAD COMPANY

New York, Baltimore, Buffalo, Chicago, Cleveland, Cincinnati, St. Louis; National-Boston Lead Co., Boston; John T. Lewis & Bros. Co., Philadelphia; National Lead & Oil Co., Pittsburgh; Georgia Lead Works, Atlanta; American Lead Corp., Indianapolis; Master Metals, Inc., Cleveland; The Canada Metal Co., Ltd., Toronto, Montreal, Winnipeg, Vancouver.

BRIEFS

▶▶▶ QUICK ACTION WAS NECESSARY to avoid serious damage when impounded water broke through a break in the Consolidated Water Power & Paper Company's dam at Wisconsin Rapids on July 4. The break gradually enlarged until water poured through a gap estimated at about 4 ft. deep and 8 ft. wide. W. E. Belter, the company's power engineer, estimated the flowage at 300 cu. ft. per second. The municipal swimming pool, just below the break, had to be closed when inundated.

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▶▶▶ PLANS ARE UNDER WAY TO REOPEN the Port Alice pulp plant of the British Columbia Pulp and Paper Company, situated on the West coast of Vancouver Island. The plant has been closed since April, 1938, due to a disrupted market in the Orient and adverse marketing conditions elsewhere.

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▶▶▶ HOLLINGSWORTH AND WHITNEY COMPANY has reported that the steel framework on the main mill building at Mobile is now up, and that foundation work on the other buildings is nearly completed. The company has not as yet announced the type of power plant to be installed.

▶▶▶ ABOUT A MONTH AFTER RESUMING PRODUCTION, following a shutdown of over a year, another layoff was ordered at the Fairville, N. B., plant of the Port Royal Pulp and Paper Company. The shutdown lasted two weeks. The reason for the idleness was attributed to the slowness in moving out accumulated stock. Both sulphite and rayon pulp are produced for export to the United States and Japan.

◆

▶▶▶ PRODUCTION OF KRAFT WRAPPING PAPER in the United States, which has shown a steady increase annually over a period of years, is expected to show further gains with the current development of the wood pulp and paper industry in the South, according to a report from the Forest Products Division of the Department of Commerce. Kraft wrapping production in the United States has grown from 480,000 tons in 1925 to more than a million tons in 1937.

▶▶▶ BRITISH COLUMBIA PULP AND PAPER MILLS are making real progress in curtailing waste and making profitable used of by-products. Members of the Vancouver Board of Trade recently learned that market conditions had dictated a more economical production policy and that many steps leading to reduction in costs and improvement of operations had been taken. Officials at Pacific Mills, Ltd., Ocean Falls, pointed out that their big plant is now in a position to eliminate consumption of imported fuel in favor of hogged fuel.

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▶▶▶ THE QUEBEC FOREST PROTECTION SERVICE has announced that up to July 14, there had been 309 forest fires in the province and that they swept 12,000 acres of woodland. Only 1,400 of marketable timber has been destroyed.

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▶▶▶ TWO MENASHA (WISCONSIN) PAPER COMPANIES held annual picnics for employees and families on July 29. The Central Paper Company held its outing on Stroebe's Island in the Fox River while the Gilbert Paper Company picnic was held at Smith Park. Games, races, and baseball were featured at both outings. The Gilbert company had, as its main feature, the annual amateur show in which a dozen acts were entered in the competition for cash prizes.

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▶▶▶ FACTORY SUPERVISORS, from subforemen to superintendents, went back to school on July 11 with the opening of the fall semester of Pabco's foremen training course at the Emeryville plant of the Paraffine Companies, Inc. The training program is the equivalent of a 4-year study in scientific management.

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▶▶▶ SUPERINTENDENTS AND FOREMEN of the Kimberly (Wisconsin) mill of the Kimberly-Clark Corporation held their annual picnic at Little Chute on August 1. A softball game was the major attraction.

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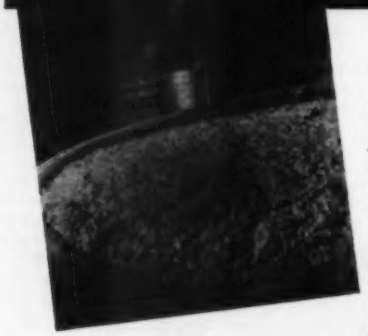
▶▶▶ IMPORTS OF WOOD PULP into the United States for the first five months of this year amounted to about 663,622 tons or approximately 23 per cent of the total domestic production of wood pulp produced in the same period, according to the Forest Products Division of the Department of Commerce. Unbleached sulphite wood pulp imports accounted for 32 per cent of the total for the five months.

Put a Lot More *SPEED* into Your Beaters!



Cut your beating time by a large margin. Improve defibration. Insure better flocculation and formation in paper or board. Use the wetting and penetrating agent that has thoroughly proven its ability to speed up beater operation and improve quality of product—

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MAGNUS CLEANERS

ADVERTISING PAGES REMOVED

Editorial

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THE TIME HAS COME

▸▸▸ THE EVENTS OF THE PAST MONTH in both political and industrial circles have been reassuring to business which has shown a gratifying expansion.

Emphasis is placed upon *political events* because all business expansion from now until after the 1940 elections either will be helped or hindered as the political events are construed as being in favor of, or detrimental to business.

All business expansion is primarily dependent upon the investment of private capital in industry. Private capital will not invest in industry unless, and until, the investors are confident that the indefensible spending and lending of tax payers' money by irresponsible political bureaucrats has been checked. In the investors' minds, the only definite assurance that such economy will prevail is the certainty that the present administration will not return to power for the four years following the 1940 election.

However, political events, particularly those of the past thirty days, are encouraging, and have resulted in unmistakable evidences that business will advance in volume as the administration declines in prestige. At present there are definite indices that the administration's house of cards is falling down. Some events that would bear out this opinion are: The decided and definite thwarting of the change in the Neutrality law, so vehemently desired; the passage of the Logan Bill unanimously by the Senate; the passage of the Hatch Bill, and the creation of the House investigation committee of the N.L.R.B. both by heavy majorities over administration protests; and last, but not least, the manner in which both Senate and House are tearing into the spending and lending debacle. Business is taking full note of these events and is reacting favorably to them.

Let there be no doubt about it. Capital will flow freely, in continuously larger volume, back into constructive industry just in proportion to the amount of confidence investors gain in the stability of the operations of the treasury that such investments will be protected from sequestration by lawless labor; and that investments will not be impaired by governmental regimentation or because punitive taxes are taking all of the profits.

The campaign is on. At last the outraged taxpayers and punished patriots will put the administration on the defensive. And it seems too obvious even to predict that the old saying about "he who laughs last," will be the theme of the 1940 election. And above that battlefield will hover the influence and guidance of that greatest of emancipators. The saying is as true now as it ever was that "You can fool some of the people all of the time, and all of the people some of the time, but you can not fool all of the people all of the time."

REVEALING FIGURES

▸▸▸ SOME VERY INTERESTING INFORMATION about the pulp and paper industry was gleaned recently from a study of two publications issued during June, 1939, by the U. S. Department of Commerce. Both of these publications relate to the Census of Manufactures: 1937. One covers the consumption of fuel and purchased electric energy by the manufacturing industries of the United States; the other, the relative importance of the leading industries for the United States.

The first of these two publications reveals that the pulp and paper industry of this country, during 1937, spent $60,627,848 for fuel, and $25,692,048 for purchased electric energy. The fuel bill included the purchase of 1,280,316 tons of anthracite coal, 15,447,254 tons of bituminous coal, 85,599 tons of coke, 5,194,920 barrels of fuel oil and 27,210,578 M cubic feet of natural and manufactured gas. The quantity of purchased electric energy reported totaled 3,236,120,430 kilowatt hours and cost $25,452,420; the quantity not reported cost $239,628.

The second publication, treating of the leading industries of the United States for 1937, shows that the average number of wage earners for the year in the paper industry totaled 110,809, while a similar figure for the pulp industry was 26,994. Likewise, according to this same source, the cost of materials, etc., fuel, electric energy and contract work for the year totaled $567,449,000 for the paper industry and $153,652,000 for the pulp industry (wood and other fiber). The value added by manufacture totaled $390,491,000 for the paper industry and $93,540,000 for the pulp industry.

A knowledge of these facts reveals the magnitude of the pulp and paper industry; and, in every one connected with the making of pulp and paper, they should stimulate a feeling of justifiable pride. In this knowledge also there should be recognized the responsibility that rests upon the leaders in the industry—management, production, engineering and technological.

CURRENT THOUGHT

"GOOD TIMES WILL COME AGAIN"

WILLIAM SIBLEY

ON page 71 of the July 29 issue of the *Saturday Evening Post* there appears an advertisement worthy of reproduction in a thousand different periodicals, *Reader's Digest* included. I'm going to quote this advertisement in full even though I couldn't write for permission to do so. The advertiser who inserted the page plate (Columbian Carbon Company) didn't even use its address. . . . That's how sincere it was in wishing to get over a message. Untainted by selfishness or self-seeking commerciality, their hard-earned money was spent in an effort to help all mankind. Enthusing over what was being done, the name was signed but the address forgotten. I'm sorry about that. The absence of the address will keep hundreds of executives of both small and large businesses from asking permission to reprint that advertisement in their house-organs—distributing reprints of the ads in pay envelopes—putting the advertisement on bulletin boards. *All* of which should be done. Here's the advertisement. I quote:

▶▶▶ "Industry in America represents an average investment of $6,500 for each wage earner. In other words, industry has spent that substantial sum in plant, machinery, tools and other equipment to enable each of its forty million wage earners to work.

"What is the source of that $6,500? Is it not the large and small savings of millions of people in this country and throughout the world? For more than a century such savings have passed into America's industrial expansion until they now amount to a total in billions of dollars too great for the human mind to envision. *But*—

"Today the flow of savings into industry has largely ceased. Few new enterprises are being started. Obsolescent equipment in many existing enterprises is not being replaced. Industry is stalemated, and millions of potential wage earners have no work. Distribution of the things of use in our modern civilization lags; production is curtailed and unemployment drags on despite government's best efforts to change the tide.

"What has caused this startling reversal? Why do many billions of dollars in savings lie idle instead of providing industry with the means to expand and to employ more workers?

"The answer is *fear*—fear of present and future taxes; of present and future government control; of government competition; of labor disturbances stemming from injudicious and biased laws; of continuing government deficits.

"We do not profess to know when our nation's savings will be freed from these fears. We do know that the great body of wage earners can help to hasten that day by standing with industry in a united effort to remove the deadening hand of politics from free enterprise.

"Then good times will come again."

▶▶▶ That is every word appearing in the current advertisement of the Columbian Carbon Company. I don't know whether that company makes carbon paper, carbon steel, or a by-product from coal. Maybe it deals in diamonds for all I know. But I do know this—if I were in the market for whatever it does make I would certainly consider buying that brand because whoever is in charge of this company has both vision and fortitude. Hats off to the Columbian Carbon Company.

And *coats* off to all other advertisers. If each advertiser, large and small, would devote one-twelfth of its advertising space to the propagation of such common sense, everybody would be far better off, the advertisers included. From A-C Spark Plugs to Zenith Radios, whether in national magazines, on the radio or in the trade press—one-twelfth of the year's space might very well be assigned to carry, unselfishly, this doctrine of good citizenship. And advertising pays. If every advertiser in the United States would do this, each one would have renewed proof that advertising *does* pay, in the return of good times—the *early* return.

I work for an advertising agency. The agency which employs my poor talents ranks eleventh among advertising agencies in the placement of industrial advertising space. Yesterday I bought 54 copies of the July 29 issue of the *Post* and sent it to all of our clients—with the page sponsored by the Columbian Carbon Company marked. I wish I could have told our clients that I had written the ad. But I did suggest their serious consideration of the insertion of one or two such advertisements in their present schedule. Its good for Business—and being good for business it is good for Good Times.

And the smaller the company that does this sort of thing, the more effective. People rather take for granted the splendid talks by Mr. Cameron on the Ford Sunday Evening Hour. They might expect the U. S. Steel Corporation, the International Harvester Company or the Standard Oil Company to do this sort of advertising. But if, during the time the big fellows were doing it, the XYZ Manufacturing Company, the Cheesehole Workers' Drill Company, the Klassy Kleaners Kleansing Kompany, and thirty thousand others equally obscure were also doing the same thing, the effect would be tremendous. The force of that advertising probably would do more to right our present-day wrongs than anything which could be harnessed.

What are *you* going to do about it?

ADVERTISING PAGES REMOVED

The Molded Pulp Industry

THE molded pulp industry of the United States is about eighty years old. During the first fifty years of its existence, this industry progressed slowly and in a small way. Not until the early nineteen hundreds did the industry really establish itself as a factor in American business and its products come to be recognized and used.

The number of United States patents issued yearly that deal with or are closely allied to molded processes or articles, may serve as an approximate index of the progress of the industry. An analysis of such patent figures as they relate to machinery and equipment for producing molded pulp articles reveals that development activity has been in cycles of approximately ten years duration and that the activity of each cycle approximately has doubled the cycle preceding it. The cycle most recently completed reached bottom a year or two ago; and a new cycle of development is now on the upgrade. An analysis of patent figures relating to molded pulp articles shows that they, too, increase in cycles which sometimes follow after each increased cycle of activity on machinery and equipment. Such an occurrence probably should be expected more or less, because the development and use of better machines permits the successful manufacture of a wider variety of articles.

Suction or vacuum has been employed from the very start of the industry for forming the pulp articles.

One of the very earliest machines for pulp molding is illustrated in Figure 1. In the operation of this machine the molding die was moved up and down by means of a rope wound around a shaft operated by a hand crank. Vacuum to form the article made by the machine was produced by the movement of a piston in a cylinder located above the molding die. This piston also was operated by a rope and crank. After molding, the article, made with two kinds of pulp, was delivered to a finishing die, the delivery to and removal from the finishing die being accomplished presumably by hand.

One of the early articles produced by a pulp molding process was a berry basket or box (Figure 2). In this case, a separate piston and cylinder arrangement furnished the suction or vacuum for forming the article. A valve in the handle on the molding die permitted control of this vacuum.

A further development is shown in Figure 3. Here the molding die was hand-operated, and the vacuum or suction furnished by a pump and tank arrangement. After molding an article in this device, the article was raised into a chamber where it was dried by the introduction of hot air or steam. To remove the finished article required the removal of a cover which was screwed in place. Such procedure seems a bit awkward and slow for commercial production; yet it has earmarks of modern methods and doubtless the device produced a satisfactory product.

The device shown in Figure 4, while retaining hand-operating methods and apparently slow ones at that, allowed for the article being molded to be pressed against the surface of a steam-heated, dome-shaped member. Evidently it was felt necessary to smooth the outer surface of the molded article by some means not hitherto used. Probably also it was desirable to maintain the article accurately as to size. The article was a half of a pulp or paper sphere. Two of these articles were glued together to form a globe on which a map of the world was pasted.

While the four preceding devices were developed over fifty years ago, they do disclose a large part of the fundamental process and procedure incident to pulp molding.

▶▶▶ One of the first practical applications of pulp molding processes to attain real commercial success was the making of fiber pails, tubs and barrels in various sizes and shapes. Many types of machines were developed for forming these articles, which after forming, were treated with various waterproofing compounds, baked in ovens, and finally finished and polished. Figure 5 illustrates a pail-forming machine together with section of the type of pail produced by it. A barrel-forming machine is shown in Figure 6.

The advent of the fiber tub and pail made up in one piece, which did not fall apart even if left out in the sun, was hailed as a boon to humanity. The march of progress and the constant warfare between materials, however, has resulted in metal largely winning out over pulp so far as these articles are concerned.

It was the development of molded pulp plates and dishes and of molded packing sheets which made the first permanent place in this industry. While first offered to the trade over thirty years ago, the demand for these products has increased steadily until, at the present time, several million of them are used every day in the year.

The molded pulp plates and dishes are used in bakeries, restaurants, delicatessen and grocery stores, and also for picnics; the molded packing sheets, for the shipment of eggs and similar fragile articles.

The molded pulp pie plate makes it unnecessary for bakeries to transport pies on the metal plates upon which they

(Continued on Page 571.)

M. P. CHAPLIN, President
Chaplin Corporation

The author's experience in the molded pulp industry dates back about thirty years to 1908 and 1909, when he was chief draftsman for a company which was building what is said to have been the first large-scale, commercially successful pulp molding machines under the immediate direction of Martin L. Keyes. ◆ In 1910, he became directly associated with Mr. Keyes, and during the next six or seven years worked with him in building what was, and what still is believed to be, the largest single pulp molding plant in the world. During this association, Mr. Chaplin developed and patented a number of new processes and machines. Following the World War (having been called to active service from the reserve list), he was connected with the Western Electric Company and Bell Telephone Laboratories. ◆ For a number of years, Mr. Chaplin carried on experimental development work in connection with pulp molding processes. Two or three years ago, he entered the consulting engineering field, dealing not only with molded pulp products and machines, but also with problems relating directly and indirectly to the pulp and paper industry, and it is in this capacity that he has since functioned.—EDITOR'S NOTE.

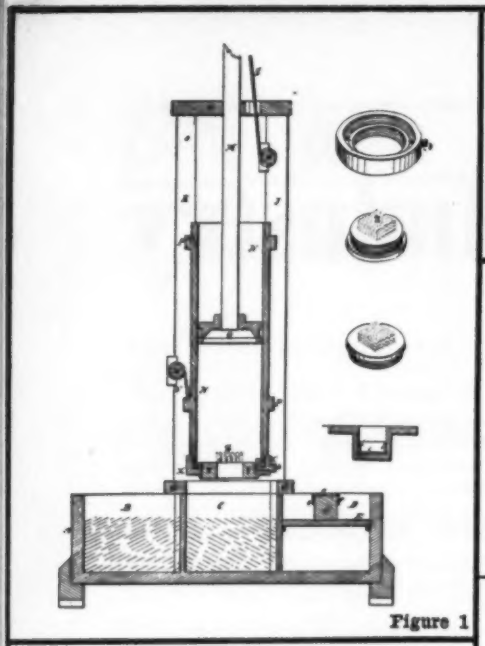


Figure 1

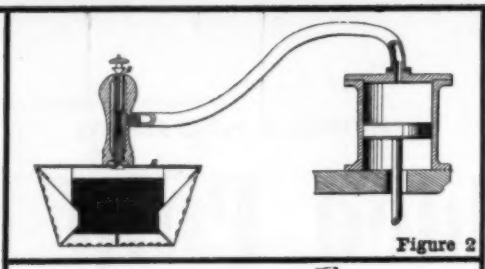
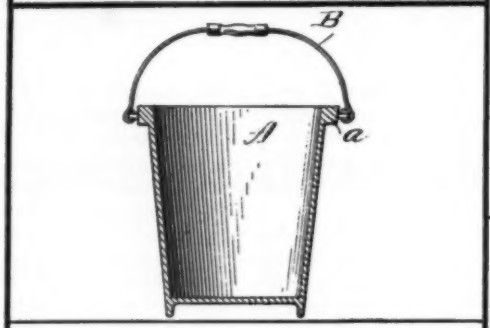
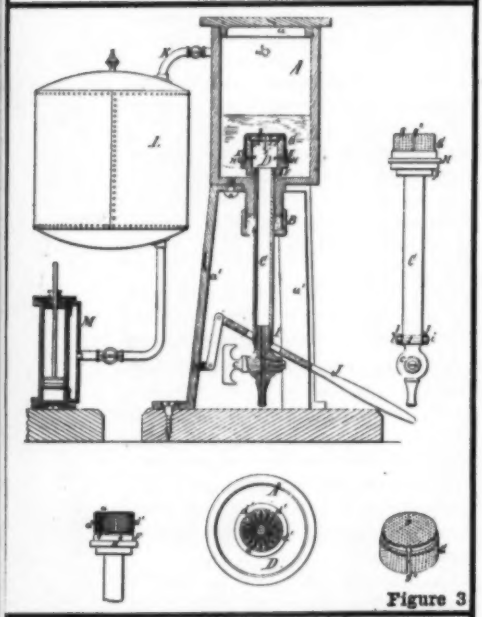


Figure 2





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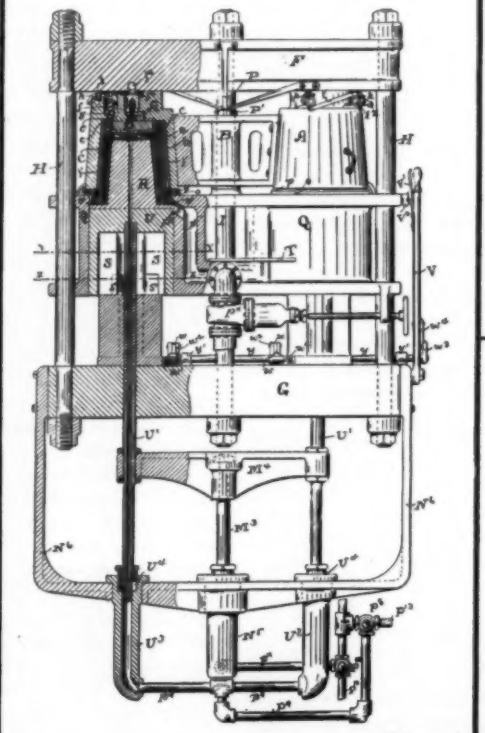
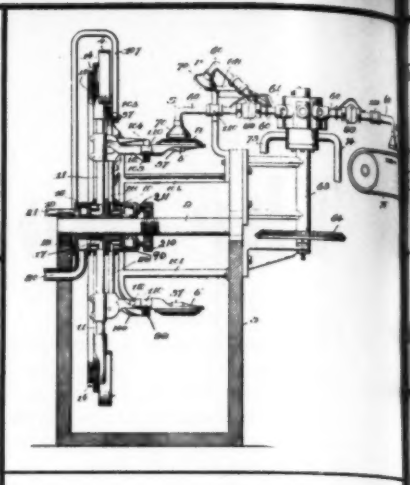
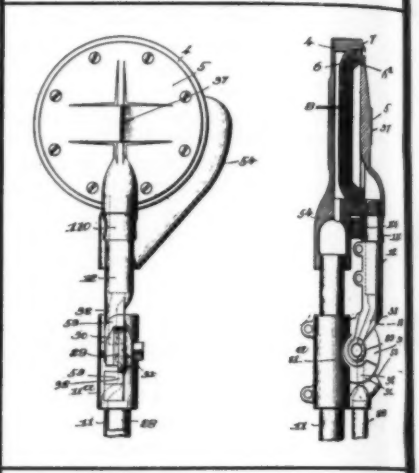
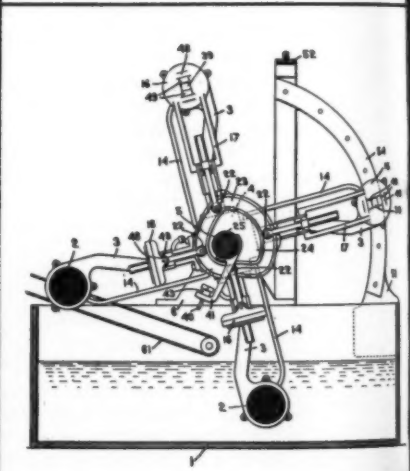


Figure 5







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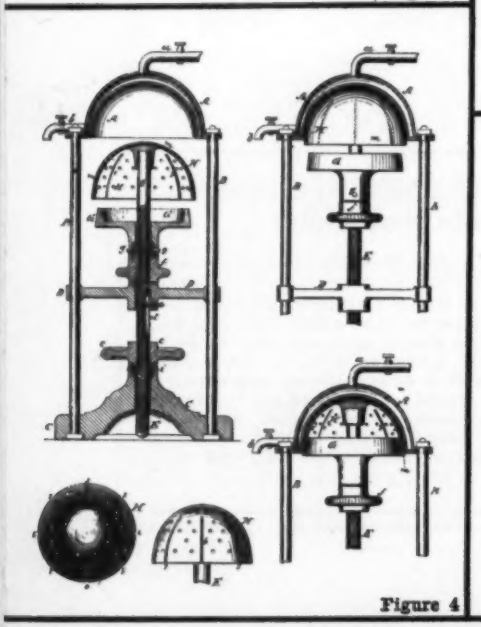


Figure 4

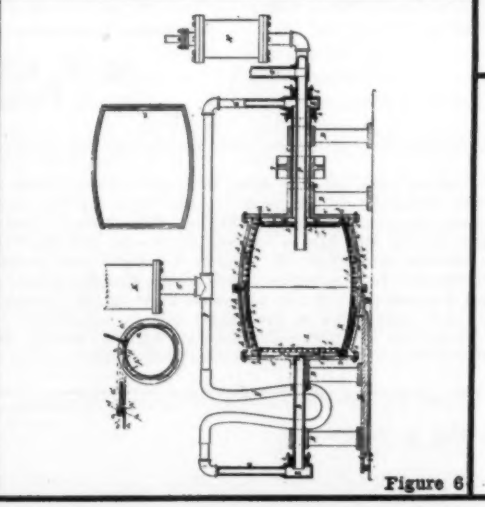
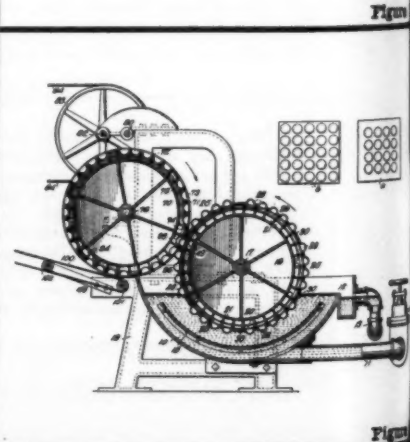


Figure 6



Figure

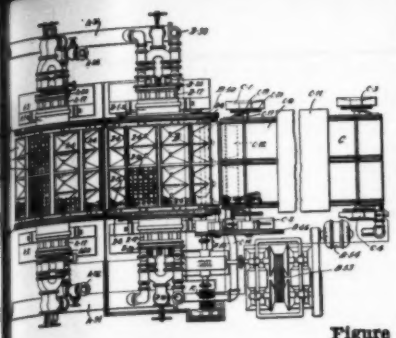


Figure 9

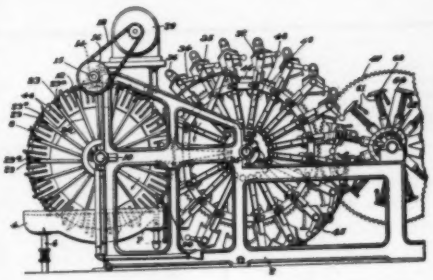


Figure 10

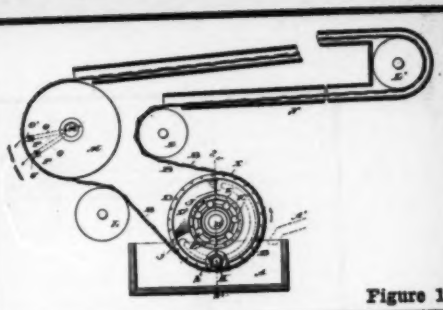


Figure 13

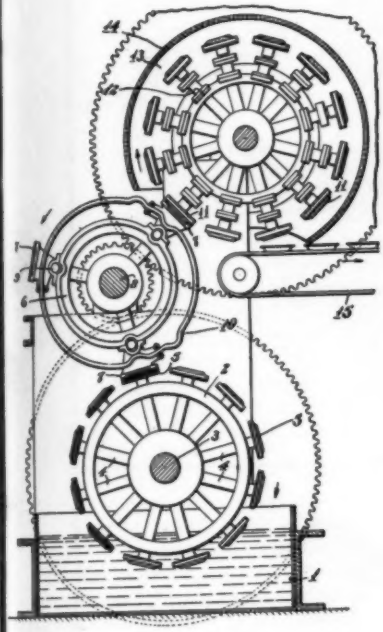
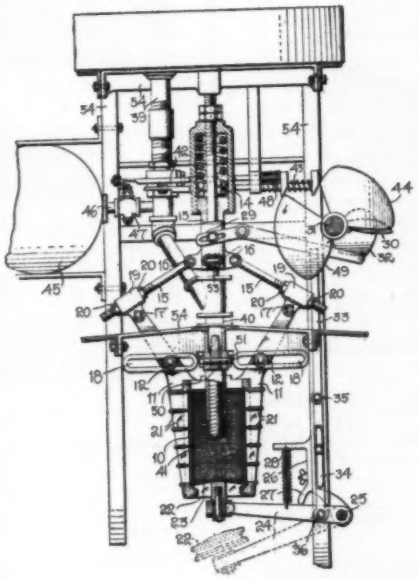


Figure 11



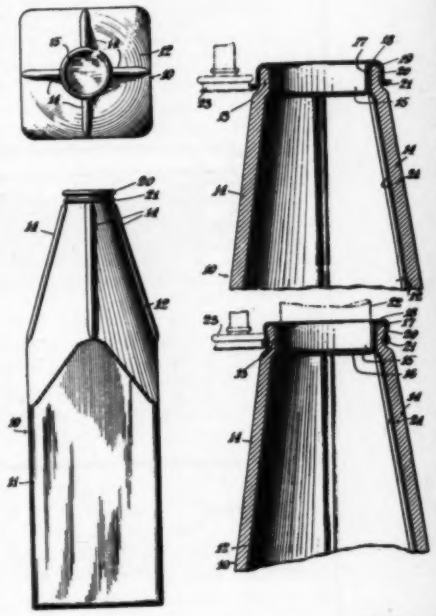


Figure 15

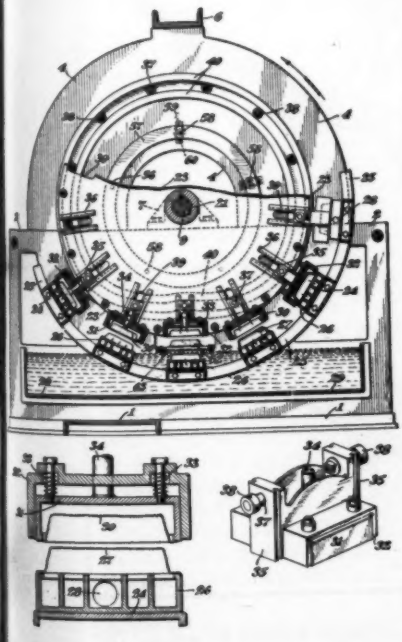


Figure 12

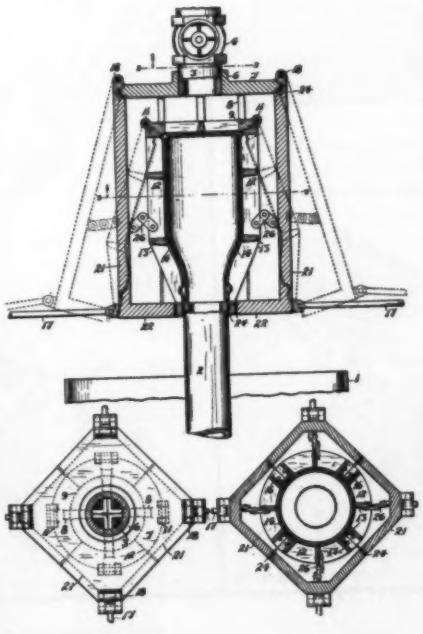


Figure 14

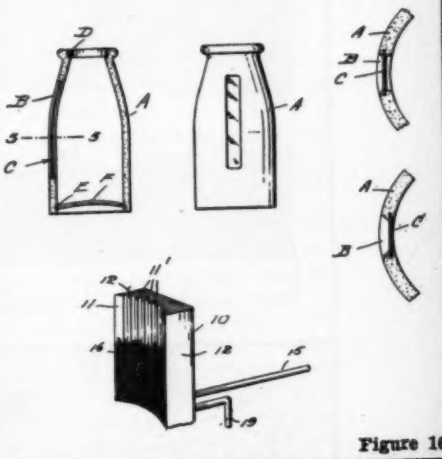


Figure 16

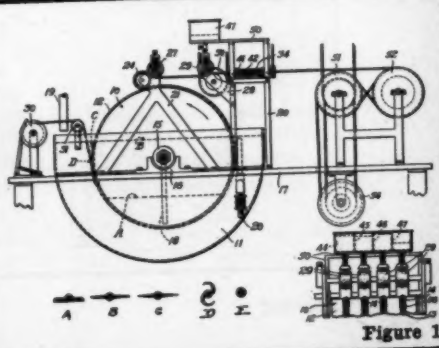


Figure 17

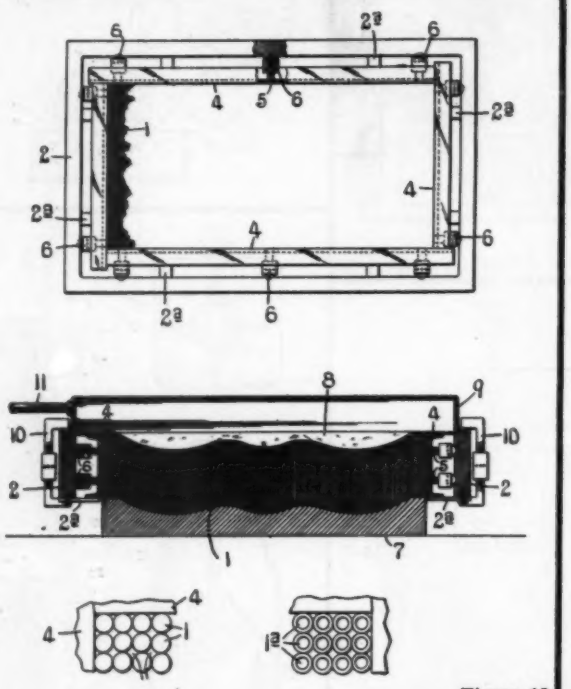


Figure 18

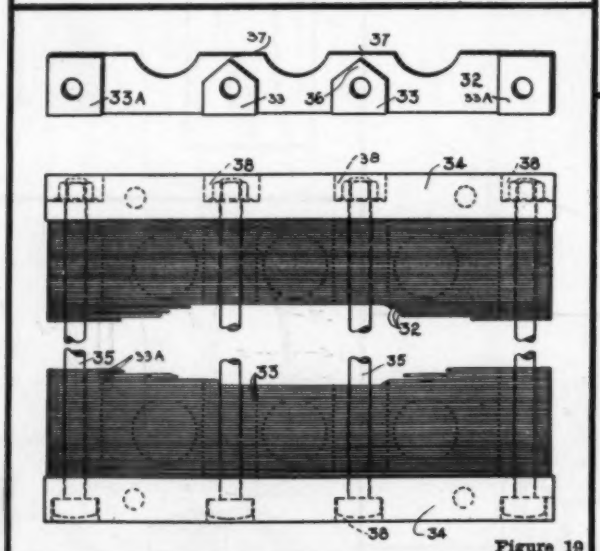


Figure 19

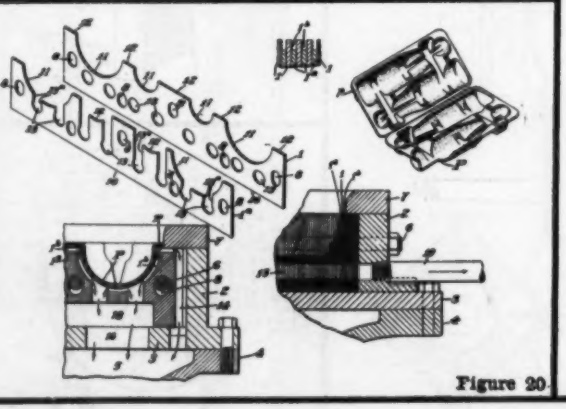


Figure 20

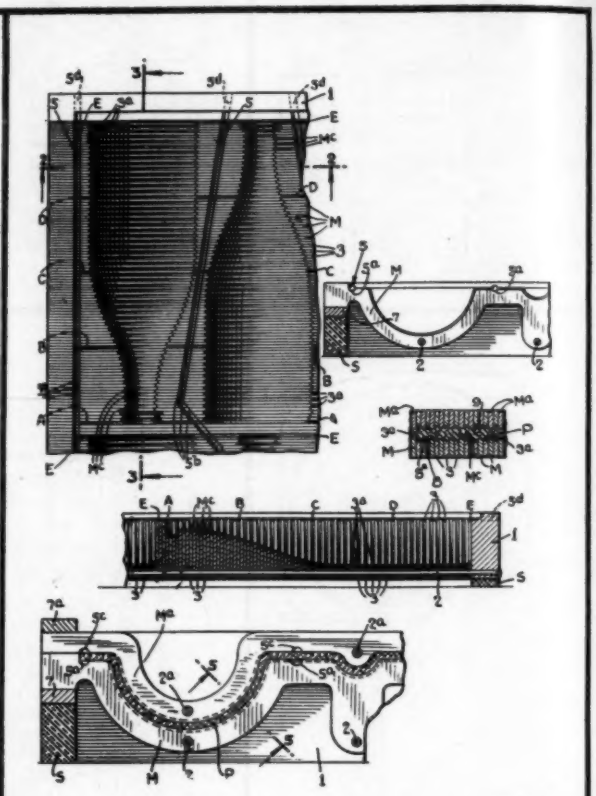


Figure 21

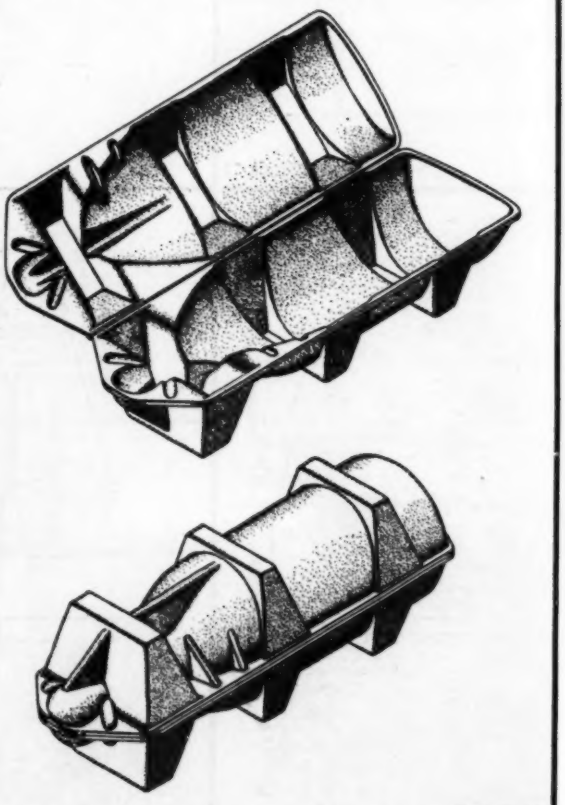


Figure 22

(Continued from Page 567.)

were baked. Transferring them from the metal plates to pulp plates effects tremendous savings.

The pulp plate also helps to preserve the crust of pie by absorbing any surplus grease or shortening in it. This characteristic of the pulp plate prevents crust from becoming soggy which, in turn, enhances the quality of the pie.

Neither the metal plate nor the pressed cardboard plate absorb such grease or shortening in the crust. The cardboard plate also has a decided tendency to flatten out as soon as a warm pie is placed on it, thereby tending to break the crust and ruin the pie.

The molded pie plate, on the other hand, retains its shape; is more rigid and firm; and permits bakery products to be handled with much less danger of injury.

Dishes used for lard, butter and similar products sold in grocery and other stores sometimes are made from wood veneer or from folded waxed board. Molded pulp dishes largely have replaced wood veneer dishes for such purposes because of their economy. They also offer a definite improvement over the folded waxed board dishes for the handling of food products because of greater rigidity and utility.

For many years eggs were packed in layers in wooden boxes or crates with a strawboard or cardboard sheet between each layer and with a paperboard grid-like partition for each layer to prevent shell to shell contact. The sheets between the layers as well as the partitions themselves offered little give or cushion and the breakage of eggs was high. The advent of a molded pulp packing sheet, in which the bottom of each egg is held in a recess or cup of soft, molded pulp, reduced egg breakage to a large degree; and, while the egg crate, in substantially its original form, has been retained to a large extent, eggs now are packed almost exclusively on molded pulp sheets.

As constrasted to the making of a sheet of paper or board in a continuous web, each molded pulp article is molded, pressed and dried separately. Individual molding and other dies are required to enable its production. Figure 7 illustrates one type of machine utilized for this purpose along with several dies necessary for its successful operation.

The forming or molding dies are machined to the shape of the desired article. Usually the surfaces of the dies are covered with wire cloth similar to that used for fourdrinier wires. Each die has an adequate number of holes, grooves or perforations of a size to enable sufficient water to be drawn through its wire screen surface to leave a layer of pulp on the wire screen. After molding, this pulp layer is pressed smooth by a second die. After this pressing operation, the pulp layer is removed from the forming die by suction applied to the second die and by the introduction of compressed air behind the article on the molding die. The second die may deliver the article directly to a conveyor belt or it may be removed by a third die which, in turn, delivers it to a conveyor. The conveyor in either case transfers the article to a drying oven for drying.

The molding dies, instead of being mounted in a sidewise position as indicated in Figure 7, may be mounted on the surface of a drum or cylinder (Figure 8). Machines of this latter kind sometimes make the articles in a continuous web to facilitate handling, the articles being cut apart after drying.

▶▶▶ Other styles of machines, employing single molding and transferring dies of the cylinder or drum type, are illustrated in Figures 9, 10, 11, and 12. Instead of removing the articles from the dies during drying, sometimes they are carried directly through the drying oven (Figure 13) either on the dies upon which they are molded or on dies to which they are transferred directly after molding.

Another type of machine used for producing molded pulp articles is illustrated in Figure 14. With this kind of machine, the pulp materials suspended in a liquid are sucked or blown into the interior of the molding die. This die is made up in sections to facilitate removal of the article being molded. In many instances, after the article has been molded, the remaining pulp suspension is withdrawn and hot air or steam introduced into the interior of the mold for drying the pulp layer thereon, a procedure that makes the article ready for use when removed from the mold.

This process has been used largely to make molded pulp figures, novelties and toys. Sometimes the surfaces of the molded articles are decorated by painting or spraying.

Molded containers for dry cereals, drugs, and the like have met with considerable success, particularly abroad.

The use of such an article for liquids such as milk, oil, etc., also has been attempted. A molded pulp oil bottle is illustrated in Figure 15. One objection to the molded pulp milk bottle was the fact that the cream line could not be seen. One ambitious individual contemplated the molding of such a bottle with a transparent window in it as shown in Figure 16. There are still problems to be solved in connection with the use of molded pulp articles for such products.

One rather special and unique pulp molding operation is the application of wood pulp directly to a copper wire by a machine as shown in Figure 17. In this machine both the wire to be covered and the molding die, which, in this case, is a narrow strip or perforated form on a cylinder, are carried through the pulp mixture in the tank, suction being applied to the perforated form. This technique results in a narrow strip of pulp embedding itself around the wire as shown in Figure 17A. The extending edges of the strip, after the wire and strip are removed from the molding wheel, are tapered and compressed as indicated in Figures 17B and 17C. Then the edges are spun or wrapped around the wire as shown in 17D, resulting in a perfect pulp covering over the wire as shown in 17E.

This method of wire covering eliminates the necessity of slitting paper into narrow strips and of winding these strips on the wire. Not only do pulp molding methods effect great economy in wire covering, but, further, this type of insulation is more uniform, requires less space, and generally is more satisfactory than that made from paper strips. Such insulation is used to a large extent for telephone cables, where a number of wires are grouped together and enclosed in a lead sheath. A single pulp molding machine, operated by a crew of three or four men, can turn out nearly a hundred miles of pulp-insulated wire per hour.

Molding dies for pulp molding machines may be made up in a number of ways. One method is to press or form a sheet of perforated metal to the desired shape, the metal being usually of brass, and the perforations about .020 in. or .025 in. in diameter. This method is used particularly on the closed molds used on the machines illustrated in Figure 14. It also is used for making molds for packing materials for eggs, glassware and other fragile objects.

The perforated metal forms a fairly rigid, durable mold; and usually is backed up and supported by castings which reinforce the rear surface of a mold at frequent points. This type of die is quite useful where the shape of the article being molded does not require too great distortion of the perforated metal. If the distortion of the metal is excessive, it is apt either to close up or increase the size of the perforations to too great an extent.

Probably the most generally used die at the present time is covered with fourdrinier wire cloth. This cloth is pressed or stretched to the die shape and secured around the edge by a clamp ring which also defines the edges of the molded article. The wire covering forms a molding surface, the die being cast or machined to shape and containing perforations or holes through which water is drawn during the process of depositing a pulp layer on the wire screen.

Other types of dies, which are used to some extent, particularly where the articles to be made by them are deep with

steep sides, are made entirely of metal in the form of tubes, wires or strips.

Figure 18 illustrates a die made of small tubes or wires.

It is sometimes possible to have a master shape for assembling wires or tubes of the same length into an accurately shaped die surface. After the tubes or wires are in place, they preferably are secured in a rigid form by immersion in hot melted tin, the die being maintained hot enough to prevent the spaces between the wires or tubes as well as the holes in the tubes from completely filling up.

Figures 19 and 20 illustrate dies made from thin metal strips. Either the strips may be pre-cut to form the desired contour and then assembled; or the strips may be assembled as a solid block and the contour machined in its surface. After machining, every other strip is dropped somewhat below its neighbor, thereby providing drainage channels between every other strip through which the water of the pulp mixture is drawn off, leaving the pulp supported on the higher strips.

Dies of similar construction sometimes are made up with an insulating material between the metal strips (Figure 21) to permit electric current to be used for drying. An article for which such a laminated or strip die is particularly adapted is illustrated in Figure 22. This article is designed to pack or contain a bottle or glass jar.

▶▶▶ Practically all molded pulp products are produced under a condition of suction behind the forming die or pressure against its molding surface. This suction or pressure is equivalent to the pressure of ten or fifteen feet of water. It usually is customary to allow an initial deposit of pulp to form on the die surface before applying suction and to build up or increase the suction as the layer of pulp increases in thickness. The selection of proper molding dies and proper molding conditions together with the use of proper fiber materials properly prepared has a great deal to do with the quality and appearance of the finished article.

The handling of the molded article after its formation on the molding die is important, as any distortion or injury to it during or after its removal from the die usually is magnified in the finished product. Co-operating dies used in the molding process must be made fairly accurately; and the mechanism which operates these dies must be so designed and so adjusted that the dies will meet properly, insuring that no rupture of the fibre formation occurs at any time.

The water remaining in the article after molding usually is removed by the application of heat. The article may be placed in or carried through an oven in which heated air is circulated at a suitable temperature to evaporate the water. Maintenance of proper circulation is necessary in order to avoid uneven shrinkage or warpage.

A previous mention was made of the fact that articles sometimes are dried by being deposited in or by being carried through an oven while held on forms. This procedure prevents uneven shrinkage and warpage to a considerable degree. It also permits the use of higher temperatures and quicker drying. Usually, however, such practice is more expensive, due to the considerable number of forms required for a single molding machine.

A quick method of drying molded articles is to subject them to highly heated air or superheated steam in a closed type of die (Figure 14). In this case, however, it usually is necessary to employ pulp materials which are reasonably air permeable, both wet and dry, so that sufficient heated air can be drawn through the article to carry away and remove the moisture therein.

A still faster and usually more satisfactory method of drying molded articles is to compress them against heated forms or between heated dies such as were mentioned previously. This method also provides a way of securing a smoother surface on at least one side of the article, particularly where a highly polished die is used. Where surplus or off-peak electric energy is available at low cost, the dies can be heated easily and efficiently by commercial electric heating units. The cost of electricity at ordinary commercial rates, however, is prohibitive, steam or circulated fluid heat being employed for heating in this case.

There are many advantages as well as problems involved directly and indirectly with the molded pulp industry which are not apparent on the surface. Consider a simple article such as a pie plate or picnic plate which may be eight or nine inches in diameter and one inch to an inch and a half deep. If this plate is made from sheet material, the actual waste of the sheet stock is in the order of thirty to forty per cent due to cutting a circle from a square sheet. This waste is eliminated entirely by the molding process. Further, the molding process enables the use of the same pulp materials or even less expensive pulp materials than were used to make the sheet. Likewise, the fact that the article can be made in a single operation, eliminating the paper and board mill and other expensive equipment, obviously effects economies in manufacturing costs.

What is perhaps more important is that a dish or container made from a flat sheet will require some stiffening or reinforcing treatment before or after pressing. Without this treatment, the article tends to flatten out in use. Even if it is reinforced, it does not have the stiffness or rigidity of an article molded to exact shape without any reforming or repressing after being made. The rim structure of the molded article has no tendency to change to another shape and, in addition, the molded article has a feeling of stiffness and rigidity not present with pressed-board products.

Pulp molding machines and processes, which employ the use of pulp materials, and which eliminate the equipment of the paper or board mill, naturally are more expensive and more complicated than machines which employ materials already partly fabricated. It is obvious that the farther one goes back toward raw materials, the more work will have to be done with these materials to produce a finished product or a finished article. While pulp molding processes employ pulp materials made from the same kinds of wood and by similar processes to that employed for pulp and paper, there seemingly is little similarity in the problems of the two methods of fabrication. In fact, many of the accepted methods of handling pulp material for flat products do not work out so well for molded products.

Pulp materials, as previously mentioned, preferably should be prepared especially for molding work. The farther that this idea is carried out, the more successful is the molding operation with its incident better quality, lower cost and ability to make additional types, sizes and kinds of products. It is not at all improbable that some of the molding machines, and the products made by them, which have not proved of marked commercial advantage, ultimately will develop considerable commercial utility due to improvement in materials and material preparation. It is just as true in the molded pulp industry, as it is in all other industries, that additional information upon materials, their treatment and their use, permits ideas long given up as impractical to again come back to life. It is sometimes rather startling to learn, after years of effort are spent in the development of a machine or an idea, that some one else had this machine or idea in all or in most of its essential aspects many years ago. This phenomenon probably is more true of an industry, like the molded pulp industry, that has grown and developed slowly. The background of the molded pulp industry, however, is sound and is well established. Future years undoubtedly will see a remarkable growth in this branch of the pulp and paper industry.

EDITOR'S NOTE: The illustrations that appear with this article were reproduced from patent drawings; therefore, the key letters and figures are not explained.

PAPER CUTTING

JULIAN W. MAXSON
Maxson Automatic Machinery Company

ALTHOUGH the operation of cutting web paper, board, pulp, etc., into flat sheets is comparatively simple in principle, it is nevertheless a branch of paper manufacture that really should be studied intensively to avoid losing, through lack of efficiency, the benefits and savings obtained in the handling of the web material prior to the actual work of converting the web into sheets.

Care should be taken in routing rolls to the cutter, especially in the fine grades, to match for color, finish, etc., so that when the paper is cut from a multiple of rolls simultaneously there will not be an objectionable shuffle of different quality sheets in the piles. Through the introduction of very fast machinery, many mills now cut coated papers from a single roll at a time for the express purpose of having all sheets in a pile match perfectly. Before fast cutting was a perfected method, it was almost unheard of to do single-roll cutting consistently, due to the prohibitive converting costs that would be entailed.

Until a few years ago, the average operating speed of rotary paper cutters was 200 to 225 feet per minute whether one roll was being cut from or a multiple of rolls were being cut from. Lately this average speed has been increased to 450 feet per minute for the same class of sheeting. The speeds to which reference is made are the web speeds through the cutter; i.e., with 8 rolls being sheeted from simultaneously, the combined web speed is 8 times 450 feet per minute on fast machinery.

To consider paper cutting principally, it is well to start with a description of the latest type of stands for holding the rolled paper. After the web of paper has been wound at the end of the paper-machine or calender, it is taken to the stand in back of the cutter and mounted on this stand by means of a chain fall, air or electric hoist, or rope tackle. The ends of the shaft which passes through the core of the roll fit into sockets or holders in the side rails of the stand. Friction is applied to these shafts to keep the web running without wrinkling. The stands have adjusters for alignment of the various webs one over the other by paralleling the rolls on the stand and lining them up edgewise. Some stands are built very heavy to accommodate paper machine reels. Lighter weight stands hold sound or square shafts which pass through the cores of the rolls. A single-tier stand is preferable where floor space permits, but some stands are built in two tiers and even three tiers. The three-tier type is found mostly in waxed paper and tissue paper mills where as many as 25 or 30 jumbo rolls are sheeted from at the same time due to the lightness of the basis weight of the paper.

The usual number of rolls of paper on a stand varies from 8 to 12.

When a roll of paper runs off to its core, the empty core and shaft are removed and sometimes a full roll is put back immediately; or the original set may be run off completely until only one roll is being cut from at the finish.

For the higher grades of paper, the number of rolls being cut from at the same time is in the lower brackets because the paper is tougher and, therefore, harder to sever with the knives on the cutter. Softer papers are the ones that can be cut from a stand-load of 12 rolls or more simultaneously.

When cutting a set of rolls, one roll that is bad should be broken out and the better rolls run off together, as a lot of time will be lost trying to make the one bad roll run without causing wrinkles, etc., in the other good webs.

Also, when loading a stand, it is well to exercise care to have the rolls grouped in the same order as the web came from the paper machine; the finishes then will match more closely.

As for the rotary paper cutter of today, it is a much improved machine over those in use ten or even five years ago. The path of the web through the cutter has been arranged to approach a straight line as closely as possible so as not to dip unduly and to raise the web from the time it enters the cutter until it has been severed by the knives. This is especially important where paper is being cut from one reel at the end of a dryer while the web from the dryer is being wound onto the other reel.

Another improvement is the use of rubber covering for the draw or squeeze rolls instead of the felt strips that once were tacked onto the rolls. The rubber is molded into the spirals that comb the wrinkles out of the web, and there is no danger that the tacks such as were formerly used to hold felt onto the rolls will come loose and mark the webs.

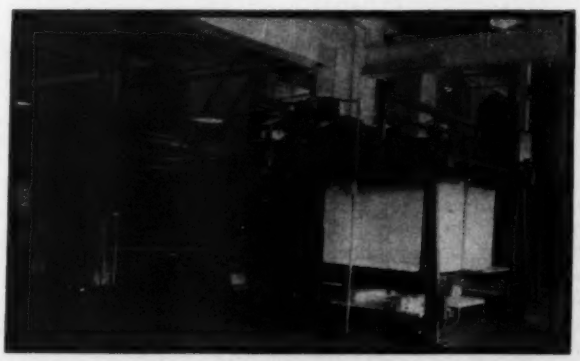
Better grades of steel are being used in the knife blades to insure the severing of one or more webs without leaving a rough or feathery edge on the sheets. Some cutters employ push and pull screws for setting the blades to cut cleanly. In additon to the screws along the blades, other cutters have a micrometer adjusted for very close setting afterwards.

The sheet lengths are determined in several ways. The most common is by use of the expansion pulley and scale. Among the other systems is the use of a variable speed transmission (especially for cutters operating continuously on paper or board machines where sheet lengths must be changed without stopping the flow of web). A cutter with expansion pulley layout has to be stopped to change sheet length. Still another method of changing size os to have a gear for, say, each 2 in. change in length supplemented by a small set of cones to adjust for intermediate lengths inside of the 2 in. graduations.

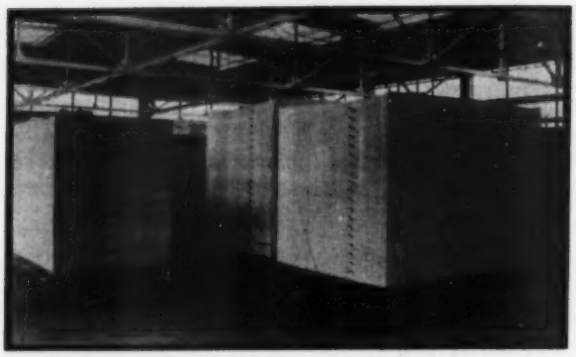
Frames of the cutters are now mostly the box type to give greater strength and to reduce the vibration evil for higher speeds.

It is desirable to locate a cutter for a pile height of about 36 in. to 42 in. of sheets to a skid (figuring the skid is to be about 9 in. high). Providing for higher piles gets the cutter too high above its foundation and it also entails building a platform or catwalk around the entire outfit for the convenience of the crew.

The slitter blades that trim the edges of the webs and split the webs for the introduction of sheets into more than one



Single-type cutter overlapping delivery tape system and lay-boy with counter and marker handling deckle-edged (as well as other kinds) paper.



Piles of paper on skids showing ream-marking tags put into rear piles in lay-boy by counter and marker.

pile at a time in the layboy are mostly roller bearing type today. They run very smoothly and do a clean job of cutting even on multiple web duty.

The modern cutters have roller bearings on the principal moving parts to reduce power consumption and maintenance costs.

The principle of severing the web is a shear action derived from the setting of a revolving blade to act against a stationary blade.

On heavier basis weights, there is a difference noticeable between the length of the top and bottom sheets of each cut of sheets. This is due to the wrap of the web around the drum of the cutter that draws in the web by pressure of the squeeze roll against it. That is why on some heavier papers it is customary to cut from a few rolls at a time.

On the shorter sheet lengths, the receiving knife travels faster than the speed of the web. On sheet lengths greater than the circumferential path of travel of the revolving knife, the knife travels more slowly than the web. Slower knife travel causes the web to block during the actual severing period; and so some cutters for long sheet duty have larger diameter revolvers. The standard diameter, however, is around 17 in. to 18 in.

For paper mill duty, there are two types of cutters, single and duplex. The single has only one set of knives, whereas the duplex has two independently operating sets of knives. With a duplex cutter it is possible to sever two different lengths of sheets at the same time from the same web.

After the sheets are severed, they pass to the tape system of the layboy and through these tapes to the pile-table, where they are jogged and piled.

Two styles of tape systems are used. One delivers the cuts of paper in tendem fashion, the other overlaps them. The latter is the system used for very high speeds since the overlapping reduces the momentum of the cuts by the time they reach the pile-table and permits very high knife speeds without risk of damaging the cuts when they come onto the piles. The percentage of overlapping can be varied to suit the sheet length and the type of paper being cut. The overlapping system requires more floor space than the tandem system. In either outfit the cuts of paper are taken from the knives at a speed around 10 per cent faster than the web is coming to the knives so that the sheets will be gotten out of the way of the revolving knife immediately. With the overlapping system, if the web is coming to the knives at 400 ft. per minute, for example, the cuts pass through the first set of high speed tapes at about 440 ft. per minute. From this set of high speed tapes the cuts drop, under control, to a set of tapes running about one-fourth as fast so that each cut catches up with and overlaps its predecessor. The cuts of paper then pass through this slow speed tape section and out onto the piles lapped like shingles on a roof.

An air current, controlled and directed by mechanism in the layboy, is employed at the point of overlap and again at the point where the lapped cuts flow onto the piles to buoy up the cuts and prevent muss-ups due to pushing them out over cuts that preceded them at both points.

An air current of about the same principle is also used on some tandem delivering tape systems.

The principal improvements in layboys are the use of motors to raise the pile-tables instead of having to crank them up manually and to supplement the mechanical means of lowering the pile-tables as paper fills them. Layboys have automatic lowering mechanisms that work mechanically, and, then, there are the motors that can be used if only about a half load is in the machine when a set of rolls runs out so that the pile-table can be lowered to the floor very quickly for removal on a truck.

The usual method of unloading a layboy is to draw the piles from the front of the machine, but it is possible to build piles to unload from the side if floor space is so limited as to make front emptying impossible.

In some mills an attempt is made to sort paper as the sheets come onto the pile-table, but this usually means running at a slow speed with a tandem delivery system. If more than one roll is being cut from at a time, it is difficult to get a good sorting under this system because the inspector really sees only the top of the top sheet and he has to guess at the condition of the underneath sheets or else stop frequently to fan up the pile.

The usual system of inspecting is to wait until the full skids are drawn from the layboy to a sorting department and then fan the edges of the piles or, on expensive grades, inspect each sheet individually.

For many years it was the custom to count the sheets after they came from the layboy and then to divide off reams, quires, etc. Some mills employed operatives to stand in front of the layboy to count the sheets as they came into the piles and to slip tags into the front of the piles. There was, however, too much of an element of chance in these systems and so a counter and marker was perfected to replace mental counting and manual tagging.

This counter and marker is attached to the side of the layboy and gets its drive from the knife of the cutter. A duplex counter and marker has two counters, one driven from each knife.

The counting is done by means of gearing and has adjustments to account for sheets being cut from various numbers of rolls from 1 to 30.

The counter can be adjusted while running to take account of rolls running off to their cores and new ones being added to the load on the stand in back of the cutter. This adjustment is a simple one and is made by the cutterman when he changes the load on the stand.

Different count divisions like reams of 500 and 480 and quires of 24, etc., are accounted for by interchangeable dials and gearing.

The actual insertion of tags is done near the top and at

Single cutter with lay-boy.

the rear of the piles in the layboy. Tagging the rear of the piles is important because no one around the open end of the layboy comes in contact with the tags to disturb them after the marker has placed them.

The tags are narrow, usually ¾ in. wide by about 5 in. or 6 in. in length. About 4 in. of the tag is in the pile and the rest protrudes.

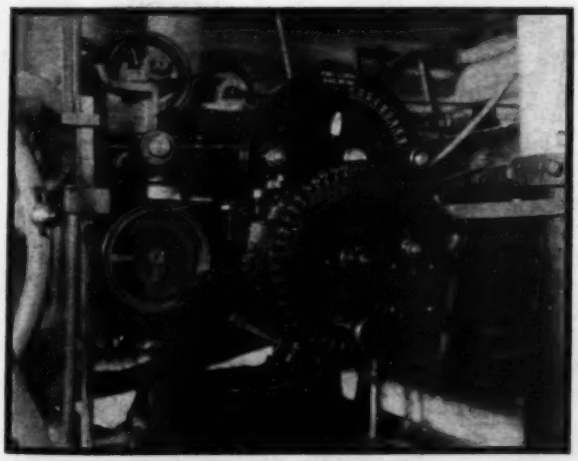
In some cases, these tags are left in the piles when they are shipped to the customer; other times they are replaced with larger tags bearing the insignia of the mill and details of the contents of the ream or quire.

More than one pile at a time can be tagged mechanically without the attention of an operative; and this tagging is done at low or high speeds with equally dependable results.

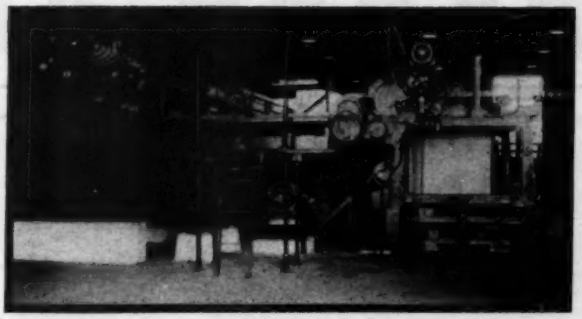
One item that must be watched closely in sheeting paper is the amount of "broke" created by excessive trimming of the edges of the webs. Another is the amount of soiled paper on the outside of rolls. The maximum amount of "broke" should not exceed 2 per cent. The total amount of "broke" can be reduced by proper handling of the rolls when loading them onto the stands, by flagging all breaks in the rolls or otherwise indicating faulty places by marking the edges of the roll, and by aligning rolls so that wrinkles will not be created when the superimposed webs are pulled into the cutter by the squeeze roll. In this connection, one must allow for rolls that are wound harder on one end than on the other. That is why it is important, as previously mentioned, to route rolls to the stand in about the same way as the paper came to the winder where it was slit and wound.

Care should be taken to figure out a motor drive for the cutter that will permit stepping up the speed gradually as a jump of too great an amount will be apt to break down the webs. The best form of drive is an individual motor for each cutter instead of driving a battery of cutters from line shafting.

Another type of cutter is the diagonal cutter, but there are not many of these used today. They were made originally for mills making envelope papers. These cutters were used to cut webs into sheets the edges of which made angles other than 90 degrees. The cutting was regulated by setting the knives diagonally to the path of the web or by lifting one end of the knife in a vertical plane until the required angle was reached when the cutting took place. As the knife cuts, the speed of the paper carries the paper past the point where the end of the blade first touches it, thus creating an angle cut.



Close-up view of counter. Upper dial is counting dial. A different one is used for each different ream or quire count. Lower dial with handle on it is used to set counter to correspond with number of rolls of paper being cut from by rotary cutter. On 3-roll work, for example, set handle in hole No. 3. Counter can be re-set for change in number of rolls while running by simply putting handle into proper hole.



Roller bearing single cutter, overlapping delivery tape system, layboy and counter and marker.

All gears should be covered to avoid injury to the crew.

In the cutting of board, the scheme is much the same as that employed in the cutting of paper, but the operation is generally a continuous running one, whereas with paper there is the stop to unload the piles. Board sheets are usually dropped into a box and lifted from it manually and placed on skids. It is possible to obtain a layboy that will run continuously but this is something of quite recent origin. It has an auxiliary mechanism to take care of sheets produced while the full pile loads are being removed and empty skids put into the layboy for the next load to be deposited upon.

In the cutting of pulp there are two systems. One is to wind the pulp and cut it from rolls the same as is done with paper. The other is to cut the pulp as it comes from the dryer and then to deposit the sheets on a platform that descends to a conveyor so that the piles are ejected onto this conveyor which takes the piles to the balers.

With the advancements made in recent years, knife-blade types of cutters have been built as wide as 222 in. In most widths, ranging from 80 in. to 120 in., the crew for cutting, counting, tagging and piling sheets consists of a cutterman and a helper. Of course, if sorting is attempted at the layboy, a larger crew is needed for the inspecting. Machines narrower than 80 in. are generally run by the cutterman alone.

It is difficult to estimate production ability of the tandem delivery and the overlapping delivery, or ordinary-speed and high-speed outfits because so many factors enter into the picture. The basis weight of the paper, the number of rolls being cut, etc., all affect the production. Perhaps a safe estimate would be to say that with a basis cutting load of 250 lb.; i.e., say 10 rolls of 25 lb. paper, the tandem production would be about one ton of paper for each 5 in. of cutter knife. On the same basis with the overlapping, the production would be about one ton for each 2 in. to 2½ in. of cutter knife.

With the newer cutters, it is possible to cut book and printing papers squarely and cleanly so that big sheets can be stacked on skids and shipped thereon without the necessity of trimming the sides on a guillotine knife cutter.

In napkin plants, it is frequently the custom to cut to consumer size on the revolving knife cutter and not to cut big sheets to be subdivided on a guillotine cutter after the loads come from the layboy.

For the cutting of Cellophane and like materials, a special type of cutter and stacker has been developed as these materials have peculiarities not encountered in the cutting of paper and board.

It is possible to adjust the cut while running on some cutters so that printed webs can be cut to register the imprint similarly on each sheet. Frequently, due to shrink or stretch of the printed web, it is necessary to bring the knife back to a certain position for cutting and this is done principally by a manually operated control. Tests are now in progress to eventually substitute photo-electric cell control for this handwork.

PAPER SKETCHES

ATTRACTIVE DEEP BLUE-PURPLE PAPER WAS USED IN COLONIAL AMERICA FOR WRAPPING UP TEN-POUND SUGAR CONES SOLD IN STORES. THE THRIFTY HOUSEWIFE EXTRACTED THE DYE FROM THIS PAPER AND USED IT IN COLORING FINE WOOLENS.
$1.00 A DAY
WITHOUT BOARD WAS THE BEST WAGE PAID AMERICAN COUCHERS OR VATMEN IN 1810. APPRENTICES STARTED AT $30.00 A YEAR, WITH BOARD AND CLOTHES THROWN IN.
SO SCARCE WAS THE QUANTITY OF BRITISH REGAL COPPER COINS DURING THE 1790'S THAT SOME PAPER MAKERS OF ENGLAND ISSUED TOKENS OF THEIR OWN FOR SMALL CHANGE. SUCH TOKENS OFTEN PASSED AS CURRENCY IN THE SURROUNDING TERRITORY.
UNITED STATES NEWSPRINT
CONSUMPTION DURING 1938, ACCORDING TO THE FOREST PRODUCTS DIVISION OF THE DEPARTMENT OF COMMERCE, WOULD BLANKET RHODE ISLAND, MASSACHUSETTS, CONNECTICUT AND THE LOWER PART OF NEW HAMPSHIRE AND VERMONT.

MAKE YOUR PLANS
For Three Great Days

SEPT. 12 · 13 · 14

- *Fine Technical Program*
- *Educational Features, Exhibits*
- *Mill and Laboratory Visits*
- *Entertainment of all Kinds*
- *Special Ladies' Program — Excellent Hotel Accommodations*

TAPPI welcomes you to three great days in Syracuse this fall—three days of what promises to be one of the biggest and most interesting conventions ever held by members of the paper industry! Advance registrations and notices forecast more than 1000—many coming from long distances by car, train, bus and plane. Here's a hint of what's in store for you. . .

NEW YORK STATE—the home of 125 paper mills (making almost every kind of paper) and hundreds of allied industries where you can visit as you come and go—the home of the New York World's Fair. Combine your visit to the Fair with your trip to the Convention!

SYRACUSE—the heart of New York State, a city of more than 200,000 which has among its many features of special interest to the paper industry, the famous New York State Forestry College paper-making laboratories. You won't want to miss it!

HEADQUARTERS—at the modern 600-room Hotel Syracuse, famous for its many national and international conventions every year. And only a block away, the beautiful 500-room Hotel Onondaga. 1100 rooms-with-bath, with many other modern hotels less than three blocks away.

IDEAS—new products, new equipment, new methods, new ways to improve your mill and your product from the fine technical program. Noted speakers—perhaps a future presidential candidate.

ENTERTAINMENT—something doing every minute with banquets, luncheons, golf, clambake, dancing—and "after hours", plenty of places where food, drink and music will meet your fondest hopes.

LADIES' PROGRAM—specially planned for wives, sisters, daughters. Teas, bridge, golf, trips and other entertainment won't leave them a dull moment.

Make your plans now—and let Convention Headquarters know that you are coming.

FALL TAPPI CONVENTION

Sponsored by Empire State Section of Tappi

HEADQUARTERS

HOTEL SYRACUSE • SYRACUSE, N. Y.

ALLIED

FIFTIETH ANNIVERSARY OF CHICAGO BRIDGE & IRON CO.

▶▶▶ Fifty years ago—on August 8, 1889—a group of men who envisaged the extensive use of all-metal structures, organized the Chicago Bridge & Iron Company on the far south side of the City of Chicago. Today, with plants in Birmingham, Alabama; Greenville, Pennsylvania; and Fort Erie, Ontario, the Chicago Bridge and Iron Company is celebrating its highly successful fifty years of progress.

The actual founder of the Chicago Bridge & Iron Company, Horace E. Horton, began his engineering career at the age of twenty-three in the year 1866. Between 1866 and 1889, Mr. Horton built a great many bridges in the Middle West, eleven of which were across the Mississippi. He was the originator of the light long-span high bridge, two examples of which are the Dubuque and St. Paul bridges, built in 1887 and 1889. Beginning with timber, the resource at hand, Mr. Horton worked through that and the combination wood and metal stages in bridge construction and soon recognized the value of all-metal construction.

In 1889 three other men—George H. Wheelock, C. E. Moss, and A. M. Blodgett, founders of the Kansas City Bridge Company—decided to merge their interests with Mr. Horton in the founding of the Chicago Bridge and Iron Company. Officers of the new company were: president, Mr. Horton, who was also chief engineer; treasurer, Mr. Wheelock, and secretary, William B. Wheelock.

It was in 1894 that the company started to progress with a comparatively new type of construction—steel tanks and towers. Through an idea discovered by George T. Horton, now president of the company and son of the late Horace E. Horton, Mr. Horton, Sr., designed a tank with a full hemispherical bottom, whose sides connected directly with its bottom. This did away with the excess of material and shop work that had been necessary before, and a method was discovered to dish the bottom plates that was new and apparently inexpensive.

In 1897, a huge fire razed practically the entire plant of the company but with practically no outside assistance, a new plant was built on the site of the old and business continued. The sale of tanks and towers increased, and in 1910 a New York office was established, followed by the subsequent erection of a plant at Greenville, Pennsylvania. In 1914, the Canadian plant was erected at Fort Erie and in 1930, the Birmingham plant was purchased to take care of Southern orders.

▶▶▶ In celebrating its fiftieth anniversary, the Chicago Bridge and Iron Company has published an interesting special issue of its company magazine, *The Water Tower*. The issue has appropriate gold covers and contains pictures of the various plants and products of the company, in addition to "family album" pictures of the personnel of 30 or 40 years ago. In addition to the special magazine issue the company has officially designated 1939 as "Anniversary Year" and has included on the cover of all other issues of the magazine and in practically all of its advertisements, a special 50th Anniversary seal developed for the occasion. This seal has been embossed in blue, black and gold on all of the concern's letterheads and printed in one color on a great many of the company's standard forms.

The historical facts recorded here were taken from the history of the company which appeared in the Fiftieth Anniversary of *The Water Tower*, which article was written by Florence Heath Horton, daughter of George T. Horton, president, and granddaughter of Horace E. Horton, founder of the company.

◆

CHEMICAL SHOW TO OCCUPY THREE ENTIRE FLOORS

Three entire floors of Grand Central Palace, New York City, have been reserved for the Seventeenth Exposition of Chemical Industries, to take place December 4 to 9. Exhibits this year will include chemicals and chemical products, laboratory equipment and supplies, instruments of precision, materials handling equipment, brewing, distilling and bottling equipment, industrial chemical machinery and materials, containers and packaging machinery and materials of construction.

An established feature of the Exposition is the student course in chemical engineering which will be presented again at the coming session under the leadership of Professor W. T. Read, Dean of Chemistry, Rutgers University. This course enables the selected college students who enroll to co-ordinate lectures by leading authorities with actual examination of the materials and chemical engineering equipment discussed. At no other time is the large assemblage of machines and materials available in one place.

Of particular interest are the advances in the processes of filtration, evaporation, and drying, which are to be shown at the Exposition. Apparatus will include filters of every type and evaporating equipment applicable not only to the chemical industries but to the food industries as well. Drying equipment will be shown in its relation to every phase of the pharmaceutical industry and there will be special reference to the processing of foods.

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HEATING AND VENTILATING EXPOSITION

Judging by the types of companies who have already taken space for the Sixth International Heating and Ventilating Exposition, there will be representation of all branches of the industry at the 1940 show to be held January 22 to 26 in Cleveland.

The exposition is to be held in Lakeside Hall, a part of the Civic Center in Cleveland, under the auspices of the American Society of Heating and Ventilating Engineers. This comparatively new building is conveniently situated and offers modern facilities adapted to exhibit requirements.

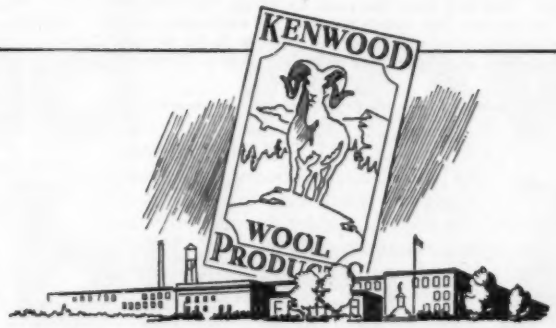
The show will cover scientific aspects of combustion in all of its phases, central heating, handling of air, and air conditioning. There will be many exhibits of apparatus and equipment of furnaces, burners, grates, steam and hydraulic units, in addition to refrigerating equipment, fans, blowers, exhausters, humidification systems, filters, ducts, and cooling towers.

Management of the Exposition and all details of exhibit arrangement and leasing will be in charge of the International Exposition Company, Grand Central Palace, New York. It will be under the personal supervision of Charles F. Roth, manager, who was similarly responsible for each of the earlier expositions.

At New York–

THE WORLD OF TOMORROW

Here, at the greatest of all expositions, are assembled the wonders of the modern world. Here is abundant evidence of the amazing contributions of modern research to better communication, transportation, production, distribution, health — evidence, too, of what the swift advancement of our time promises in new wonders for tomorrow.



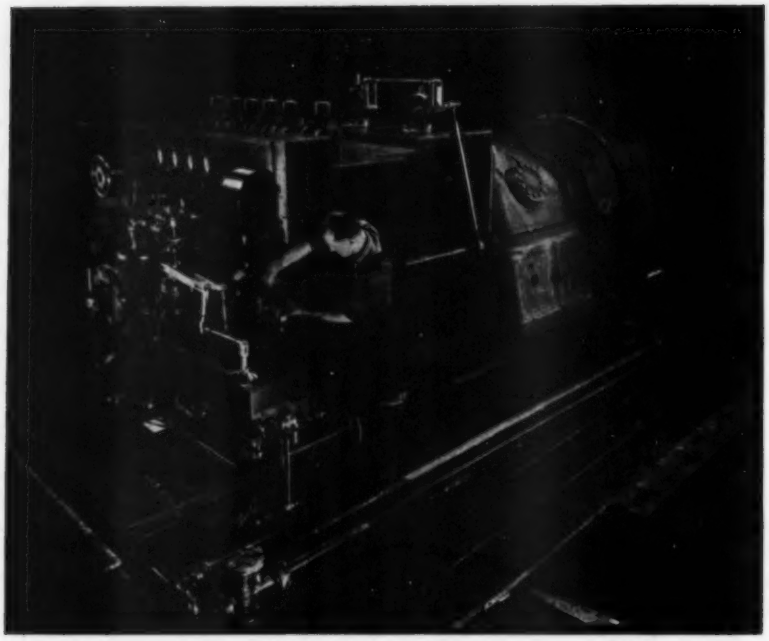
At Huyck's Mills–

THE FELTS OF TOMORROW

Here is the largest and most modernly equipped felt manufacturing plant in the world. Here, step by step, choice fleeces gathered from the four corners of the earth are converted by intricate processes into finished felts. And here modern research is continuously contributing to the needs of the paper industry—applying each new discovery in making better felts for tomorrow.

F. C. HUYCK & SONS

KENWOOD FELTS • ALBANY, N. Y.



Here is a 2,000-kw., 3,600-r.p.m. Allis-Chalmers condensing automatic extraction impulse reaction steam turbine shown during shop erection and under construction for use in a sulphite mill in the State of Michigan. The unit was designed for steam conditions of 600 lb. gauge, 750 deg. Fahr., 28½ in. of vacuum. The design provides for extracting steam automatically for processing service at pressures from 5 lb. all the way to 50 lb. as may be required. Approximate shipping weight of complete turbo-generator unit is 75,000 lb.

NATIONAL OIL PLANS ADDITION

The National Oil Products Company of Harrison, New Jersey, has approved plans for a 5-story brick or concrete building to house manufacturing equipment which will provide additional facilities for the production of industrial chemicals and processing oils. The building, to cost between $150,000 and $200,000, will be located on the Passaic River site at Harrison. It is expected that the building will be completed by winter. Charles P. Gulick, chairman of the board of directors of the National Oil Products Company, stated that the new structure was necessary because of the need for increased manufacturing facilities to produce new and improved industrial chemicals and processing oils recently developed at their own research laboratories.

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DOVER CONCERN CHANGES NAME TO KIDDER PRESS CO.

The U.P.M.-Kidder Press Company, Inc., of Dover, New Hampshire, has changed its name to the Kidder Press Company. The reason for the change is for convenience only and reflects no change in organization, personnel, or policy.

The initials "U.P.M." had reference to the United Printing Machinery Company which had been joined to the original Kidder Press Manufacturing Company. The latter company was founded in 1876 by Wellington Parker Kidder, the originator of automatic feeding. The company manufactures rotary presses for the converting trade, aniline and gravure presses, bronzing machines, and special presses. Other products include slitters, roll winders, and the Chapman Electric Neutralizer.

◆

LINK-BELT ORGANIZES NEW CORP.

The Link-Belt Company, Chicago, has recently organized a wholly-owned but independently-operated subsidiary known as the Link-Belt Speeder Corporation, which will manufacture and sell power-operated excavating and materials handling shovels, drag lines, and cranes. This announcement follows closely on the heels of the announcement a few months ago to the effect that the Speeder Machinery Corporation of Cedar Rapids, Iowa, and the Shovel Division of the Link-Belt Company had consolidated. The products of the new corporation will be manufactured both at Cedar Rapids and Chicago and will be marketed through a large list of authorized distributors.

Officers of the new corporation are Alfred Kauffmann, chairman of the board; T. M. Deal, president; Walter Baker, vice president; W. C. Carter, vice president; H. E. Kellogg, treasurer; G. H. Olson, secretary; O. A. Prather, assistant secretary, and F. V. MacArthur, assistant treasurer.

◆

▶▶▶ THE POWER PIPING DIVISION of Blaw-Knox Company now has as its exclusive distributor in the State of Ohio for process and power piping, the George P. Schumacker Company of Cleveland. The Schumacker company specializes in engineering and sale of boiler house equipment and maintains representation in Toledo, Columbus, Cincinnati and Cleveland.

◆

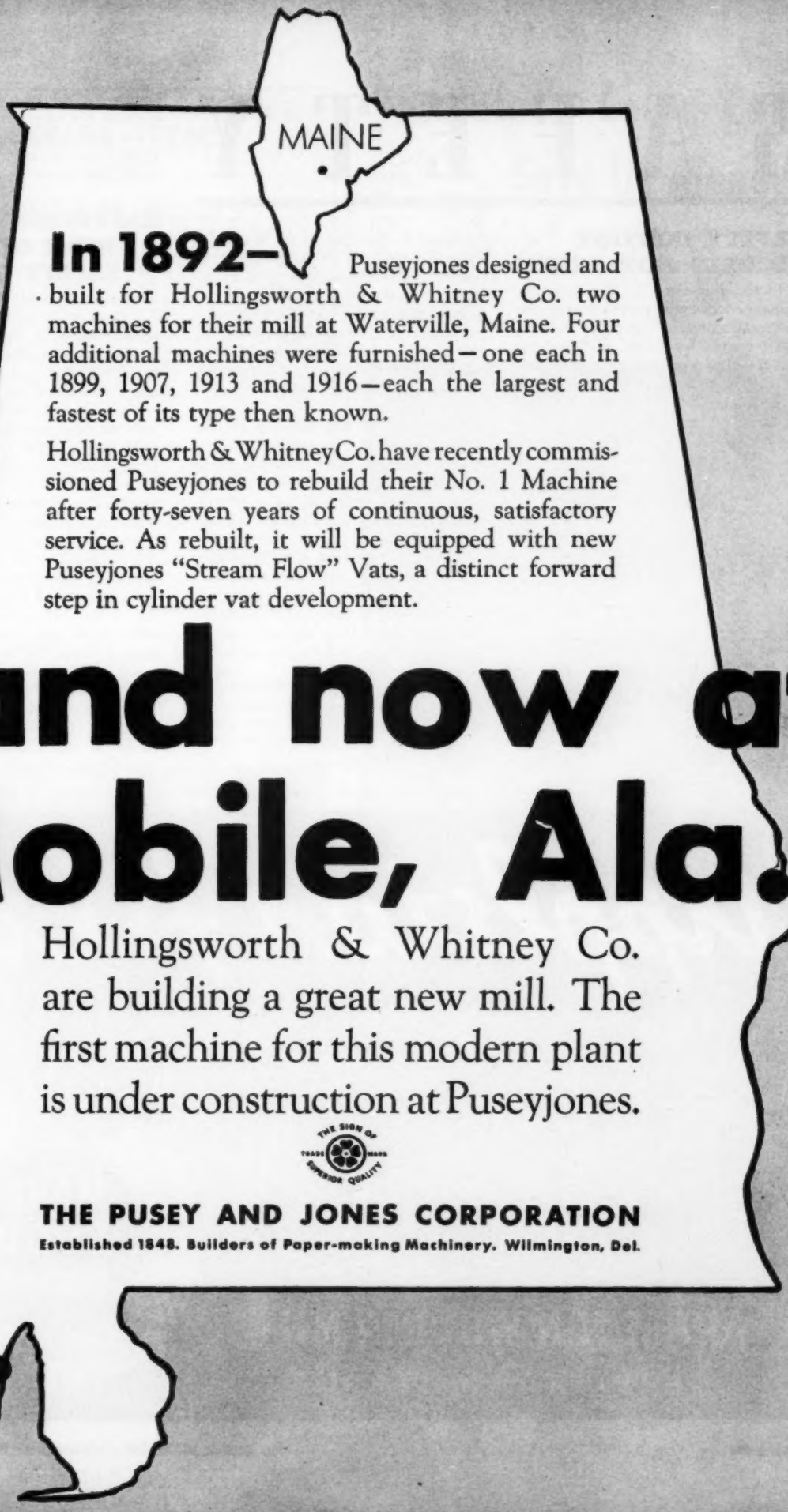
▶▶▶ THE THOMAS TRUCK AND CASTER COMPANY, Keokuk, Iowa, has purchased the business of the Wm. H. Sippel Corporation, South Bend, Indiana, it was announced by J. F. Thomas, president and general manager of the former concern. The Sippel organization manufactures truck casters, floor trucks, industrial trailers, and skid platforms. The Sippel products will be combined with the Thomas line of casters and trucks. All production will be carried on in the Keokuk plant.

◆

▶▶▶ PLANS FOR THE CONSTRUCTION of an addition to the Union Carbide and Carbon Corporation plant in Charleston, West Virginia, were announced recently by the company. Company officials said the addition would extend existing facilities for the manufacture of vinylite, a synthetic resin used as a plastic, and in the making of safety glass. Construction costs will total about $1,500,000 it was said.

◆

▶▶▶ THE HEPPENSTALL COMPANY of Pittsburgh has announced the appointment of Ray Smythe of Portland, Oregon, as Pacific coast representative for its Eis and Kleenkut patented analysis special alloy knives for the pulp and paper industry. The Heppenstall Company has specialized for the past fifty years in the manufacture of shear knives for cutting metal, a special outgrowth of which has been special knives for the pulp and paper industry. Mr. Smythe has been closely associated with the paper industry for many years.



In 1892— Puseyjones designed and built for Hollingsworth & Whitney Co. two machines for their mill at Waterville, Maine. Four additional machines were furnished—one each in 1899, 1907, 1913 and 1916—each the largest and fastest of its type then known.

Hollingsworth & Whitney Co. have recently commissioned Puseyjones to rebuild their No. 1 Machine after forty-seven years of continuous, satisfactory service. As rebuilt, it will be equipped with new Puseyjones "Stream Flow" Vats, a distinct forward step in cylinder vat development.

—and now at Mobile, Ala.,

Hollingsworth & Whitney Co. are building a great new mill. The first machine for this modern plant is under construction at Puseyjones.

THE SIGN OF SUPERIOR QUALITY

THE PUSEY AND JONES CORPORATION

Established 1848. Builders of Paper-making Machinery. Wilmington, Del.

SAFETY

SAFETY CONTEST SCORES NOT READY

In the July issue of this magazine an announcement appeared stating that the final scores in the paper industry safety contest would be published this month. However, owing to the amount of work involved in obtaining recapitulation reports, checking, etc., the final standing of all mills in the contest is not available at the time this issue goes to press. Therefore, the report will not appear until next month. At that time, it is hoped to give the full report on the contest as well as complete information on the annual conference of the National Safety Congress which will be held in Atlantic City, October 16-20.

◆

SAFETY MEETINGS NOT CLASSED AS WORKING TIME

The American Paper and Pulp Association recently mailed to all members an important ruling just given out by Elmer F. Andrews, of the Wage and Hour Division, U. S. Department of Labor. This release dealt with an inquiry from the U. S. Bureau of Mines regarding the time spent by employees attending safety meetings. Since, of course, this interpretation would affect all industry, it is of utmost importance to the safety and personnel executives in our industry.

The sense of the decision is that time voluntarily spent in attending safety meetings after working hours and as part of a general safety program sponsored or approved by a governmental agency engaged primarily in the dissemination of safety information, will not, as a general rule, be considered as working time under the Fair Labor Standards Act. Member mills may obtain more detailed information on this subject from the offce of the American Paper and Pulp Association, New York City.

◆

▸▸▸ THE SULPHITE AND CHLORINE DEPARTMENTS of the Kimberly (Wisconsin) mill of the Kimberly-Clark Company won the question bee in a safety program held at the Kimberly clubhouse on July 26. Three hundred and fifty employees attended the event.

◆

HAPPINESS IS THEME OF 1940 SAFETY CALENDAR

The artistry and interwoven lessons that have characterized the annual calendars issued by the National Safety Council have reached such a state of perfection that it is usually a difficult task to comment on them.

Following the custom inaugurated with the 1939 calendar, the illustrations used in the 1940 calendar are made from photographs rather than paintings such as were used for a number of years. The pictures are dramatic and real, but instead of instilling fear through reproducing gruesome subjects, the pictures for the twelve months are typical of the theme of the calendar "Stay Happy and Avoid Accidents During 1940." This can be reversed and still tell the same story—"Avoid Accidents During 1940 and Stay Happy."

On the back of each month is imprinted valuable information for different kinds of accidents, first aid rules, antidotes, etc., in fact this calendar carries as much safety information as would some volumes.

SPECIAL ITEMS AT BARGAIN PRICES

SLIP RING MOTORS
220/440 VOLTS, 60 CY. 3 PH.

250 H.P. WEM	CW		503 RPM
400 H.P. WEM	CW		1200 RPM
250 H.P. GE	I-M		585 RPM
100 H.P. GE	I-M		600 RPM
100 H.P. WEM	CW		900 RPM
100 H.P. GE	MTC	5552	690 RPM (new)
40 H.P. WEM	CI	654D	690 RPM (new)
200 H.P. WEM	CI		585 RPM
200 H.P. WEM	CW		500 RPM
300 H.P. GE	I-M		585 RPM 3 bearing

2200 VOLTS 60 CY. 3 PH.

300 H.P. GE	I-M		585 RPM 3 bearing
300 H.P. GE	LE	15	1200 RPM
400 H.P. WEM with full magnetic control	CW		1200 RPM

SQUIRREL CAGE
220/440 VOLTS, 60 CY. 3 PH.

200 H.P. GE	I-M		1800 RPM
300 H.P. Allis			900 RPM
100 H.P. GE	KT	543	1800 RPM
100 H.P. GE	I-K		450 RPM
100 H.P. WEM	CS		870 RPM
75 H.P. GE	I-K		720 RPM
300 H.P. GE	IE	15B	1200 RPM
40 H.P. GE	KF	504	900 RPM B Bear. (new)
40 H.P. GE	KF	445	1200 RPM B Bear. (new)
50 H.P. GE	KF	504	1200 RPM B Bear. (new)
60 H.P. GE	KF	505	1200 RPM B Bear. (new)

2200 VOLTS 60 CY. 3 PH.

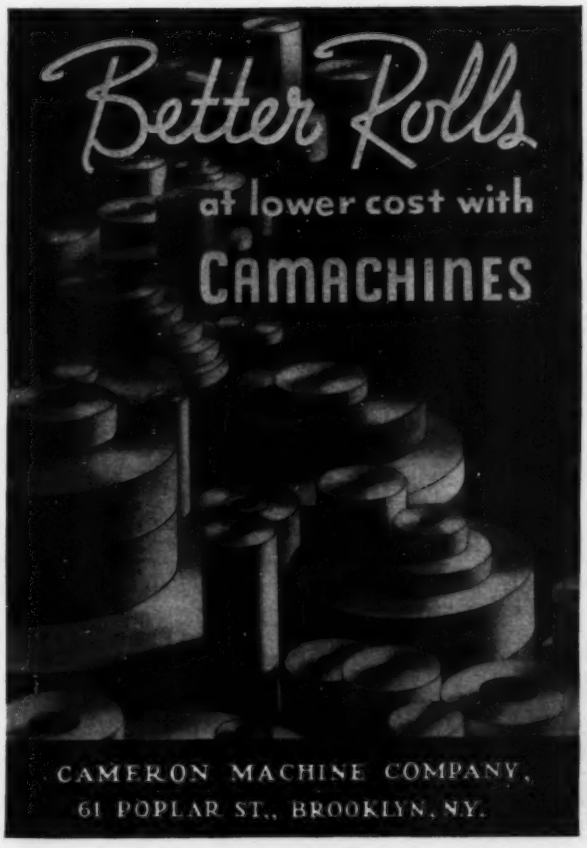
300 H.P. GE	IE	15B	1200 RPM
200 H.P. Allis			1800 RPM
40 H.P. Elec. Machy.			1800 RPM
50 H.P. WEM	CS		900 RPM

In addition to the above, which are being offered at bargain prices, we carry in Scranton stock hundreds of others, A.C. and D.C. motors, motor generator sets, transformers, mine locomotives, hoists and other items.

We are prepared to rent—buy—sell or exchange equipment of all sizes and types.

Wire—write or 'phone your requirements or send us your lists of equipment for disposal.

Penn Electrical Engineering Company
517 Ash Street — Scranton, Pa.



"Stainless Color Carts Save Us Money"

SAYS OHIO MILL MAN

Life's not so rosy for this tank on wheels. Colors for coated papers are *tough* bed-fellows. Yet ARMCO Stainless Steel always "comes back for more," in the words of a prominent Ohio mill superintendent.

"We've had these color carts two years now," he volunteered. "Before we bought stainless steel, ordinary metal carts became sieves every five or six months. But these stainless wagons will last years longer than we ever dreamed of. They save us money other ways too. A spray of cold water and they're clean and smooth. There's no danger of off-color or color contamination here."

For carts, head boxes and other important equipment you'll profit by using ARMCO Stainless Steels. These durable metals resist rust and slime-growth, help bring paper products through clean. Let us assist in selecting the right grade of ARMCO Stainless for your requirements. Write The American Rolling Mill Company, 1531 Curtis Street, Middletown, Ohio, U. S. A.

ARMCO

ARMCO
STAINLESS STEELS

ASSOCIATIONS

TAPPI DIVISIONAL ORGANIZATION

The following organization has been appointed by the Executive Committee of the Technical Association of the Pulp and Paper Industry to carry on the major technical activities of the organization.

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A. E. Montgomery, Chairman
Heat and Power Committee
J. A. Lee, Chairman
Materials of Construction Committee
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Fibrous Raw Materials Committee
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Non-Fibrous Raw Materials Committee
L. K. Burnett, Chairman
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TROY, N. Y., U. S. A.

▶▶▶ TENSION CREATED BY international political problems has had considerable effect upon the European timber market, says a report from the Forest Products Division, Department of Commerce. Surveys of the market show that the turnover between Scandinavian and other timber exporting countries and the Western European importers have been retarded. Generally extensive re-armament programs, however, are expected to make for an increased demand in the market.

◆

▶▶▶ THE SOUTHEASTERN DIVISION of the American Pulp and Paper Mill Superintendents Association will hold its fall meeting in Durham, North Carolina, October 13-14. A large attendance is expected.

◆

BRITISH PAPER GROUP TO VISIT CANADA AND U. S.

The Canadian and American pulp and paper industry will act as host during September and October this year to a large group of prominent members of the Technical Section of the Paper Makers' Association of Great Britain and Ireland.

The group is to leave Liverpool on September 8 and will arrive in Canada on September 16. From this point on, they will make an extended tour of Canadian mills, including those of the Ontario Paper Company, Price Brothers, Anglo-Canadian Pulp and Paper Company, International Paper Company, E. B. Eddy & Company, Hinde & Dauche Company, and the Robert Gair Company.

After viewing Niagara Falls, the party will make a tour of the Middle Western and Eastern parts of the United States, visiting the Hammermill Paper Company, Ford Motor Company, Kalamazoo Vegetable Parchment Company, Allied Paper Mills, Hawthorne Paper Company, Mead Corporation, the Scott Paper Company and possibly other paper companies. They will also visit points of common interest at all stopping places, including the Government buildings in Washington and the World's Fair in New York. A special meeting of the Canadian Technical Section is to be held for the British group in Montreal.

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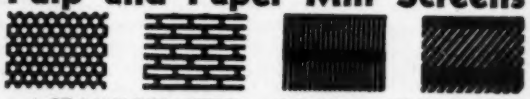

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75 ton Sulphate Mill

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4 story complete Bag Plant with Machines.
Steam and Electricity.
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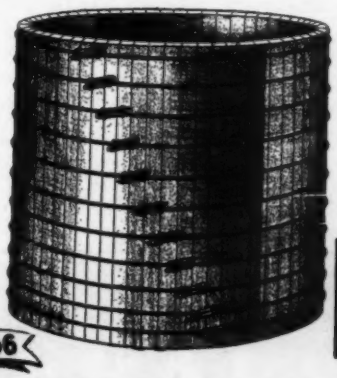

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Convention Papers . . . Abstracted

Shipping Paper Safely to Customers

W. L. ENNIS, Manager, Claim Prevention Department

The Milwaukee Road

It always has been our thought that the first requisite in getting any commodity through to its destination was proper selection of the equipment to be used for the transportation of the commodity involved. In the loading of paper on skids, it has been our experience that most of our trouble has been the result of failure of skids to safely and properly carry through to destination.

Once we have constructed a skid of sufficient strength to carry the weight to be imposed upon it, then it becomes necessary that the securing of the paper on the skid, by means of metal strapping, etc., be carried through in such a manner as to keep the sheets from moving and thereby distorting the load on the individual skid and, in turn, distorting the entire load.

Skids should always be loaded lengthwise in the car, and, if possible, in double rows. Each row of skids should be blocked or braced between the rows, either by floor cleats at the sides or some sort of bracing material that will keep each row in line. Where the loads extend to a point in the vicinity of the doorpost, either crib bracing or floor diagonals should be employed to keep each row intact. Where the rows extend into the doorway and there is a minimum amount of space between the skids in the two ends of the car, that space should be taken up with cribbing.

Where the "floating" method is employed (each unit banded together with metal strapping), proper thought should be given to the type of strapping to be employed. It has been our experience in employing this method of loading that at least two metal bands or four wire ties should be employed. The metal bands should be of steel, at least 1¼ in. wide, 20 gauge, with a strength of not less than 4000 lb. per band. If wire is employed, it should be 8 gauge, with a tensile strength of not less than 2000 lb. per strand, and should be installed in such a manner that two wires are placed near the top of the load and two near the bottom. It must be further understood that in applying metal strapping or wire ties that equal tension on each tie is of utmost importance.

In the loading of newsprint paper in rolls, it has always been our belief that the proper method to be employed was to stow the rolls on end, staggering the rolls in such a manner as to permit them to nest in the car and endeavoring to use a car that leaves as little space as possible between the rolls and the side walls of the car. It has always been our thought that in loading this type of paper, the floating method worked out to best advantage.

Another situation which seems to have developed quite fast during the past few years is the desire of certain consignees of this class of paper that same be loaded flat on the car floor. One of the most serious difficulties arising from this method of loading has been the action of the rolls on the top tiers turning in transit, this action naturally causing a rubbing and chafing through the wrapper and creating damage to the paper itself. In order to overcome this particular situation, metal strapping has been employed at each end of the unit and a sufficient amount of protection has been placed between the strap and the wrapper to permit some play on the part of the rolls, but at the same time to avoid damage to the paper in the individual rolls.

We have organized in all of our terminals what are known as "Careful Handling Committees." These committees meet monthly, go over reports of bad handling in their respective terminals and make suggestions and constructive criticisms with the view to eliminating, or at least minimizing, the amount of trouble in not only their own yard but over the system at large. Furthermore, this company owns and operates better than 60 impact recorders, these machines being kept moving constantly with the one idea of developing just where rough handling is occurring. Our superintendents maintain a positive record of these reports and where any one foreman or engineer is charged with an excessive number of rough handling shocks, disciplinary action is taken.

It has been our observation in watching cars unloaded to find in many instances that the unloading forces do not appreciate the need for careful handling.

The elimination of damage to paper as well as to any other commodity is not a one-man job. It takes the co-operation of every one concerned, starting right out at the time the article is manufactured, seeing it placed in its container, then, loaded into the car, properly transported from the point of origin to destination, properly unloaded from the car, and then properly placed in position for ultimate use, in other words, removed from the container in which it traveled.

High Speed Refining

EDWARD M. ROOT, Chemist

Dilts Machine Works, Inc.

The Dilts Hydrafiner consists primarily of a conical plug rotating within a conical shell. Stock enters the small end of the plug at which point a volute impeller is employed to force the stock into the spaces between the knives, thus eliminating the slippage commonly occurring at this point in jordans. This impeller also insures the spaces between the bars being under pressure and free from voids because the incoming stock is brought up to the speed of the stock being discharged. Such an arrangement makes for complete and thorough action on the stock by all the bars and makes for a greater amount of work done per unit of power input. Another function of the impeller is to neutralize the thrust and relieve the load on the main thrust bearing. In fact, under some conditions of head, the thrust is actually reversed, making it harder to back the plug off than to set it up.

Plug and shell liners are one piece stainless steel castings. They are available in both straight bar and herringbone combinations. The bars are of varying widths, ranging from 5/16 in. in width to ⅞ in. The speed at which the unit operates is either 1200 r.p.m. or 1800 r.p.m., as desired.

There are other mechanical features such as water-cooled packing boxes, anti-friction bearings, flexible couplings, etc. The main body is a one-piece grey iron casting with all fits bored at one set up to insure complete alignment, and is provided with three inlet and three discharge openings for convenience in piping.

Installation of the Hydrafiner can be made either for continuous treatment, either singly, or in combination with other Hydrafiners or jordans, or for batch circulation where a Hydrafiner is hooked in conjunction with one or more beaters or chests. Both of these methods of operation have proven successful especially in cases where there was a lack of beating capacity and the purchase of additional beating equipment would mean overcrowding of the beater room or the erection of a new building.

Let us turn now to some of the operating characteristics of the Hydrafiner on different types of stocks. To begin with, we might take folding box board.

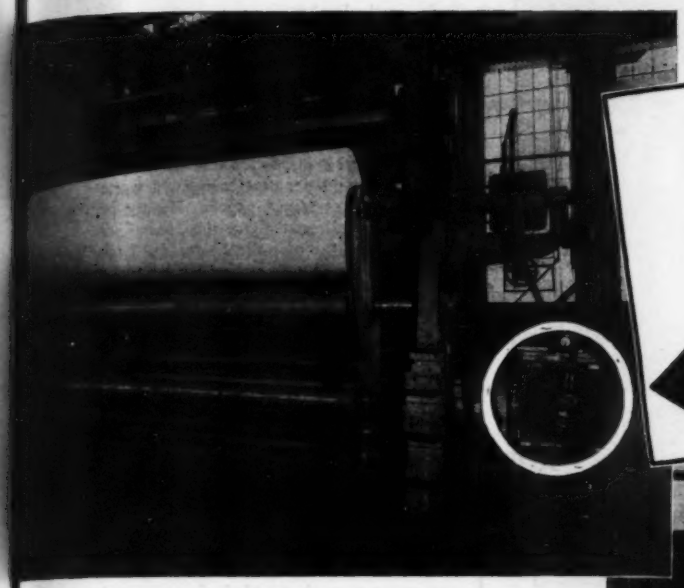
Filler stock for folding box board is for the most part made from old paper. It is necessary to process these old papers in such a way as to result in a well defibered stock, retaining at the same time as much of the original fiber length as possible. The Hydrafiner is admirably suited for producing this type of stock because it may be so set up and operated as to produce a vigorous scrubbing action with little or no cutting. It can be placed in series with some other part of the system and operated so as to permit a large amount of recycling with the plug backed off, or the plug can be set up and the stock passed through only once or twice.

The accompanying abstracts are of papers presented at the annual meeting of the American Pulp and Paper Mill Superintendents Association, June 13-15, 1939, at Washington, D. C. (Another installment of these abstracts will appear next month.)

A SUPERCALENDER DRIVE

FOR PAPER-MILL MEN SEEKING RELIABLE, EFFICIENT OPERATION

AS EASY AS STEERING YOUR CAR

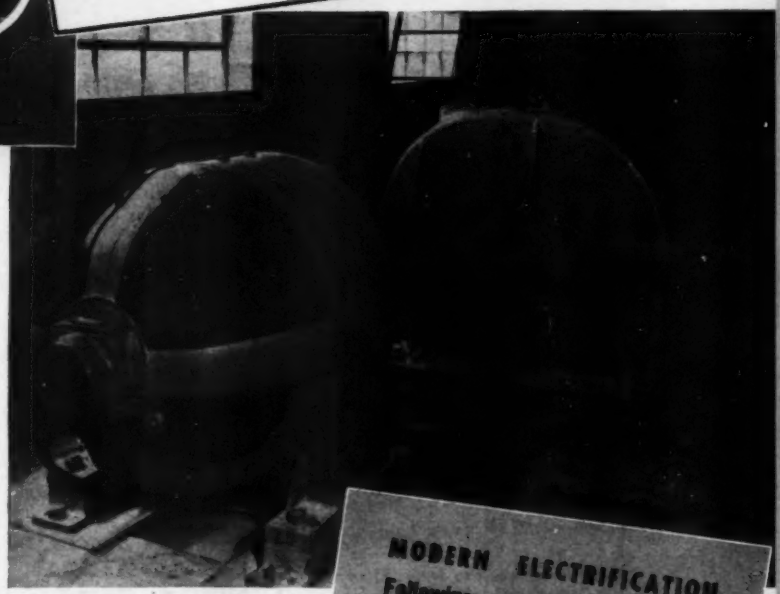


Supercalender and control station for generator and driving motor. Consolidated Water Power & Paper Co.

THIS type of high-speed supercalender drive, with "steering-wheel" adjustment, is literally as easy to operate as it is to steer your car on a smooth highway.

TURN WHEEL FOR ALL SUPERCALENDER FUNCTIONS

With this system, all functions of the supercalender—starting, threading, accelerating, slowdown, stopping—are at the immediate control of the person at the wheel of the rheostat. Rate of acceleration and deceleration are under the direct control of the operator, and are adjustable to suit the requirements of the paper being calendered. For additional convenience, during threading, the supercalender can be started or stopped from several push-button stations located around the machine. A wide range of speeds is available. Five such drives have been applied with conspicuous success in mills of one of the leading midwestern paper companies. This application has been developed in collaboration with the paper company engineers.



A single-motor drive for high-speed supercalenders. G-E adjustable-speed d-c motor driving 1200-fpm supercalender through reduction gear.

ADJUSTABLE-VOLTAGE CONTROL

For indication of the load, the operator has only to read the ammeter mounted on the top of the rheostat. In addition to watching the sheet of paper, the operator can use the ammeter as an indicator of the accelerating, decelerating, or braking load. Speed changes of the drive are effected through field adjustment of the generator and d-c driving motor. Turning the handwheel changes the intensity of the fields. This is one of the numerous adaptations of d-c adjustable-voltage control, devised by General Electric for modern requirements of industry.

For information on this or any other drive refer to the G-E office near you, or write General Electric Company, Schenectady, N. Y.

MODERN ELECTRIFICATION

Following are ten modern applications of electricity to paper mills, devised especially by General Electric to improve productive efficiency.

1. Automatic tension control
2. Turbines with 3-arm governing mechanism
3. Progressive draw adjustment
4. Turbines with wide-range electric governors
5. Adjustable-voltage winder drives
6. Sectional paper-machine drives
7. Selsyn draw adjustment from front of paper machine
8. High-speed voltage regulators
9. Photoelectric register control
10. Direct-connected chipper motors

GENERAL ELECTRIC

HANDLED WITH A YALE ELECTRIC TRUCK

7,500,000 lbs.—3,750 tons . . . A lot of tonnage in any man's language. Yet that's what one operator using a Yale High Lift Electric Truck is able to handle in 3 months for the Atlanta Plant of the King Plow Company.

And the units to be handled are not standard in size or shape. They run the gamut from metal scrapes to the heaviest die cuts. A real handling job if there ever was one.

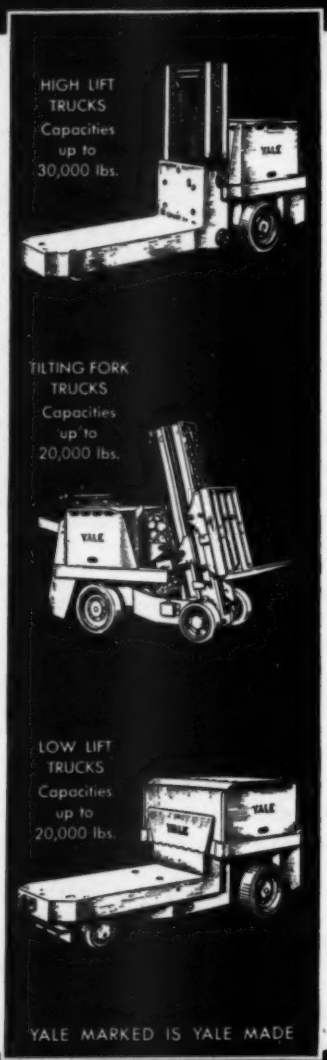
Here's what the King Plow Company has to say about their Yale Electric Truck:

"This truck does a 4-5 day job in 11 hours . . We find many jobs for this equipment which it was not originally installed to do . . . Almost before it was put to work it paid for itself . . . This truck never hesitates even for the longest and steepest ramps . . . It is indispensable—has saved substantially."

Indispensable—Never hesitates—Saved substantially . . . these words means saving and efficiency to the King Plow Company. And they can mean the same to you—for the Yale Electric Truck always conforms to the same service standard—the best.

It has to. Its drive units are more powerful . . . its construction is stronger—its engineering is more advanced. More than just a truck—the Yale Electric Truck is a mechanical efficiency expert! Send for free catalogue giving full information.

Trained sales engineers are located in 56 major industrial centers ready for instant service. Consult your classified directory.


HIGH LIFT TRUCKS
Capacities up to 30,000 lbs.
TILTING FORK TRUCKS
Capacities up to 20,000 lbs.
LOW LIFT TRUCKS
Capacities up to 20,000 lbs.
YALE MARKED IS YALE MADE

YALE

THE YALE & TOWNE MFG. CO.
PHILADELPHIA DIVISION, PHILADELPHIA, PA., U. S. A.
IN CANADA, ST. CATHARINES, ONT.

Both methods have proven themselves through the test of time.

The Hydrafiner also finds its place in the manufacture of test liner. For instance, one middle western manufacturer uses a Hydrafiner to prepare filler stock for his paper machine which normally makes 16 point, 64 lb., 100 per cent Mullen test liner. This filler stock is 60 per cent corrugated waste and 40 per cent mixed papers. He pumps to a headbox directly above the Hydrafiner and circulates through the Hydrafiner back to the headbox, drawing off what is needed to go to the board machine via one jordan.

Another Hydrafiner user utilizes a unit in batch treatment of virgin kraft for test liner. This user tells us that he now does in twenty-five minutes with a Hydrafiner what used to require 3½ hours in beaters, and he has done away with four beaters with all the attendant savings.

Kraft stock can be processed equally well by continuous hydrafining.

Another mill making a large variety of groundwood book papers uses a Hydrafiner hooked to two beaters to prepare sulphite and bleached kraft pulps. While circulating one beater through the Hydrafiner, groundwood pulp is drawn into the other beater. At the end of the hydrafining time, the valves are switched and a predetermined amount is discharged into the beater containing the groundwood. Inasmuch as a whole beater was hydrafined, enough stock has been prepared for two or three beaters of the final furnish.

As a final illustration of the wide variety of papers which can be processed in a Hydrafiner, we would cite a manufacturer producing among other specialties a high grade tag sheet. This manufacturer was having trouble not only with beater room capacity, but also with stock uniformity which varied so much as to be disadvantageous. Accordingly, he purchased a Hydrafiner and uses it in conjunction with three beaters and two jordans. Prior to installing the Hydrafiner, he used five beaters with the rolls down hard and set the jordans well up. Now he uses three beaters with a light brush, circulates through the Hydrafiner, and has backed off the jordans, using them only to touch up the stock as a final bit of preparation. Besides increased uniformity, he reports an approximate 20 per cent increase in production and all physical tests have risen.

Engineers and Stuff Preparation

D. MANSON SUTHERLAND, JR.
Sutherland Refiner Corp.

Generally speaking, engineers employed directly in pulp and paper mills are expected to confine their efforts to efficient operation and maintenance. Efforts on their part to study the problems of stuff preparation have been discouraged. Consequently, engineers in the employ of pulp and paper machinery builders have taken the lead in developing new equipment either with or without the help of practical papermakers.

More recently, engineers attached to research laboratories are concentrating on stuff preparation in conjunction with chemists and papermakers.

Power engineers have the responsibility

of generating power at the lowest cost, and, therefore, have a problem which does not come into intimate contact with stuff preparation to the same extent as the plant or process engineer. However, the power engineer is vitally interested when his load is increased and he wants to find the cause.

Whenever power engineers find their plant is being operated at nearly full load or further expansion is being considered, they should urge the management to consider and invest in power saving stuff preparation equipment before incurring the expense of power plant expansion.

Every plant engineer has difficulty in obtaining reliable data about performance of beating and refining equipment. The manufacturer of such equipment will give data on over-all dimensions, approximate capacity, and motor to drive the same; but he will refrain from giving any definite data on the stuff and sheet properties.

It is true that pulps vary according to species of wood, technique of cooking and bleaching; but this is inevitable, and beaters and refiners must be capable of treating various grades with slight modifications in tackle. The most that any beater or refiner can do is to beat, brush, fibrillate or cut the fibers. The degree of each effect regulates the stuff and sheet properties.

Most manufacturers of beaters and refiners are endeavoring to improve their equipment. Obviously, it is the tackle which gives the refining action, and it is mainly in the design of the tackle that improvement must come. The commonly known forces of speed and pressure must be applied in the most efficient manner. Power varies as the cube of the speed and the fifth power of the diameter, consequently the peripheral speed should be as low as practical. The low speed machines take the least power.

The diameter of the tackle, however, is important as it determines the number of bars and grooves which can be incorporated. The edge and surface of the bars do the actual refining work on the fibers and there must be enough of them to process a given amount of pulp in a given time. The best design, therefore, is one that will give the maximum number of bars over the smallest surface.

There are many variations in the width of bars as well as their composition. Bars of carbon steel, bronze or stainless steel vary from 3/16 in. to 1 in. in width, while basalt lava beater rolls have bars 3 in. wide.

The papermaker is mainly interested in features which affect commercial operation. These may be listed as: reproducibility of any given stuff properties; uniformity of stuff properties; flexibility in range of stuff properties for any given paper machine; and cleaning facilities.

To be more specific, let us look at one particular design of single rotation disc refiner.

A single rotation disc design was adopted in preference to double rotation because experimentation over a period of several years showed the single rotation to be the most efficient. A general comparison will show a single rotation unit at the same speed to have 80 per cent of the capacity of a double rotation unit but only to require 20 per cent of the power to accomplish the same degree of stock preparation.

COOKERS for the South's First Sulphite Mill

Two of six 10 ft. dia. by 22 ft. vertical cookers leaving the stress relieving furnace at Birmingham for the new Fernandina Pulp and Paper Co. sulphite mill at Fernandina, Florida.

THE Fernandina Pulp and Paper Company will soon begin operation of their new sulphite paper mill, now under construction at Fernandina, Florida. This will be the first sulphite mill to be located in the south.

Modern methods and materials are to be used at this new mill, and among the equipment fabricated in our shops for use at Fernandina are six stress relieved vertical cookers, two of which are shown in the above picture. This is one example of the type of work handled by our three fabricating plants, which are equipped to handle both field-erected or shop-assembled work, including welded pressure vessels built in accordance with paragraph U-69 of the A.S.M.E. Code for Unfired Pressure Vessels. The Birmingham plant, in addition, specializes in work radiographed and stress relieved. Write our nearest office for information or quotations.

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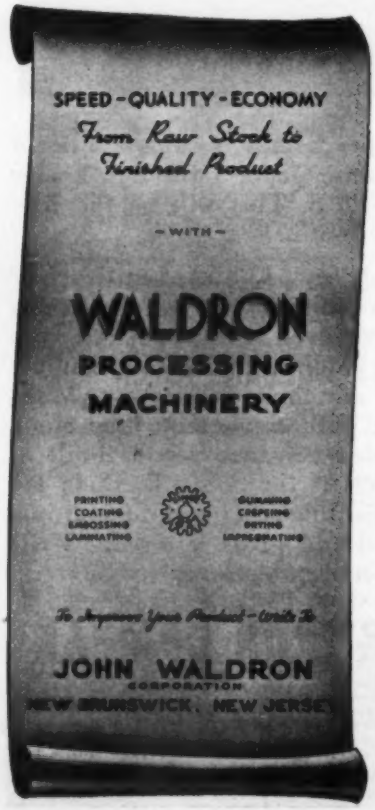

This particular type of refiner is normally designed for direct drive through two heavy-duty radial bearings and one double-direction oil film thrust bearing. These bearings are so designed that the radial bearings carry the load without permitting a deflection in the rotating head and disc. Lubrication for these bearings is supplied by a pressure system consisting of a motor driven rotary pump, water jacketed cooler and an oil filter. A reservoir for oil storage is located in the refiner frame.

Hydraulic pressure, supplied by a motor driven rotary pump through a four-way valve and a globe throttling valve, controls the movement of the stationary head. By applying pressure to the piston mounted on the feed tube, the head can be moved backward or forward to the desired operating gap between the discs. The throttle valve limits the movement to as little as .001 in. as desired by the operator. The four-way valve changes the direction of movement.

The refiner is mechanically locked in place when the desired operating position is reached by a locking wheel threaded on the tube. A dial gauge indicator is mounted on the refiner in front of the operator to show him the position of the stationary disc in relation to the rotating disc.

To assure a high degree of stock treatment at high tonnage, it is essential that the tolerances in the refiner at the disc surfaces be less than the size of the fiber to be worked on. This accuracy must be accomplished by four means, viz: design, workmanship, assembly and materials. The materials used in the refiner are cast iron, bronze and corrosion resistant alloys; the frame is of cast iron; and all parts in contact with the pulp are of corrosion resistant alloys. To further protect the pulp, the cover and bedplate are lined with stainless steel at all points where pulp can come in contact with them.

Another feature of interest to the engineer in this refiner is the absence of tramming devices or springs for unloading the discs.

Safety or protective devices also are of prime interest to the engineer. Bearings must be protected from pulp and water, oil failure, and overloading. To prevent damage from failure of the oil supply, a pressure switch is placed on the oil supply system which cuts out the main drive motor of the refiner when the oil pressure drops below four pounds per square inch. Overloading of the bearings is prevented by a pressure release valve on the hydraulic adjusting system.

Another point requiring protection is the face of the discs against any stoppage of the flow of pulp. This protection is also provided by a pressure switch which is mounted on the pulp supply line. Should the pulp pressure drop below three pounds per square inch, the switch will open and shut down the refiner drive motor.

The success of the refiner as to tonnage, capacity, power and stock characteristics depends entirely on the disc when the remainder of the refiner is sound in design and workmanship. Factors which engineers must have in mind when designing discs are: speed of rotation, impact and contact inches, area of grooves, relationship of groove area to bar area width and angle of bars, available power, and stock characteristics to be developed.

Making Calcium In Water Behave

R. E. HALL, Director
Hall Laboratories, Inc.

Were we to limit our discussion to the conditioning of water for power plant purposes, we would feel quite at home because of our experiences in and contact with many of your plants. However, whether in the problems of the power plant or those of your processes, we meet on common ground in dealing with calcium in water. Because of the problems involving calcium, we have been led to investigate the bearing thereon of the quite distinctive reactive features peculiar to the molecularly dehydrated phosphates. We shall confine our discussion to the glossy sodium hexametaphosphate or Graham's salt and which in different uses we designate as Hagan phosphate, Buromin, or Calgon.

Let me briefly summarize five fundamental properties of sodium hexametaphosphate.

(1) Sodium metaphosphate coagulates albumin, whereas ortho- and pyrophosphate do not.

(2) The metaphosphate in solution, and particularly at elevated temperatures, reverts to orthophosphate, and in either acid or alkaline solution.

(3) The metaphosphate suppresses the ionization of a considerable number of metals in solution, most useful for our purposes being the sequestration of calcium ion into complex radical. This is the more remarkable as calcium is a material of which complexes are practically unknown.

(4) The metaphosphate is very effective in causing stabilization of supersaturation of calcium salts, particularly calcium carbonate.

(5) The dispersive action of sodium metaphosphate is very marked.

By intermittent feed of the metaphosphate to boiler feedwater, feed line scale is prevented. In the boiler, the metaphosphate changes to orthophosphate, keeping down the alkalinity in the boiler water, and preventing scale formation by combining the calcium into the form of calcium orthophosphate, which is a sludge, and removed by blowdown. The property of stabilizing supersaturation makes it possible economically to prevent formation of scale in condensers and other heat exchangers, even though the cooling water may contain considerable quantities of calcium carbonate hardness.

Here is a method of softening water which is totally different from the processes of distillation as in an evaporator, precipitation and filtration as in a lime-soda softener, exchange as in a zeolite softener. These other processes remove the calcium, but the Calgon leaves the calcium in solution, only it is so tightly sequestered in the complex radical of the Calgon that it can have no effect on soap and cannot combine with phosphate, carbonate, oxalate, etc.

It seems uncanny, nevertheless, the addition of one or two parts per million of the sodium metaphosphate to a calcium bicar-

bonate water so stabilizes supersaturation that ready precipitation of the calcium bicarbonate does not occur. We have already spoken of the usefulness of this property of the metaphosphate in condensing systems and heat exchangers where calcium-bicarbonate water is used for cooling purposes. Removal of old scale and prevention of new scale in various pipe lines are actualities.

Technical Control In the Tissue Industry

H. D. COOK, Sweet Bros. Paper Mfg. Co.

In polling our branch of the paper industry for information as to the extent of technical control being employed, we have replies from sixteen mills which are bound to represent something different from the average of our industry. The total daily tonnage reported is 991; and the total number of technical men employed is 71. This gives an average of 14 tons daily production per technical man.

The largest mill reporting is far below the average in proportionate number of technical men, having one for each 19.5 tons of product. The smallest mill (4 tons) has the largest proportion of scientific help, employing two men for the four tons or an average production of two tons per man.

The smaller mills find technical help just as profitable as the larger mills; and the extent to which it may be used profitably depends on the individuality of the mill in product, management and physical problems.

Of the sixteen mills reporting, only three have no technical men. All but one mill make some sort of pulp test.

Five mills treat their water with alum, five filter and four chlorinate. Some use more than one treatment. Only three mills out of sixteen do not treat their water at all. Six mills make no water tests; five mills, no coal tests; and three mills have no technical control of their boiler room.

Half the mills beat by instrument; and two-thirds of the mills use the freeness test to control beating. Only four mills measure the water into their beaters.

Nine mills or over half use consistency regulators and depend on them. Some mills qualify this by warning that they have to be very carefully adjusted and kept in perfect working order.

Ammeters are three times more popular than watt meters as jordan controls. This is probably because of the cost of watt meters, but it would seem that the inaccuracy of using the current to indicate power with the usual variable power factor would make the extra cost of watt meters worthwhile. Three mills have neither watt meters nor ammeters, the jordans probably being belted to a line shaft.

Two-thirds of the mills specify slice setting and height of pond. Five of the reporting mills do not specify machine speed.

The tear test is nearly as popular as the universally used bursting test to indicate the strength of paper. The pull or tensile test is not far behind; but only one mill uses the folding test.

Half of the mills report automatic drying regulation. In ten mills others besides the superintendent condemn paper when off quality.

Continuous Performance

PROVED

BY THE WAY MILLS RE-ORDER

● When the largest mills order and then consistently re-order Atkins Chipper Knives—not once, but every time new knives are needed, as many do—you can be sure the repeat purchases are backed by PROVED PERFORMANCE.

This suggests that you, too, will find it profitable to test Atkins Chipper Knives in your mill, along side other knives. Let "cost versus hours of work" figures be your guide to future purchases. In any such comparison you'll find Atkins Knives step up chip production and lower cutting costs, take less time out for sharpening . . . produce the kind of uniform, clean-cut chips that mean more valuable pulp and better paper.

Three Types of Atkins Chipper Knives

REGULAR—Made of Atkins special analysis steel. Furnished either *Laid* steel or *Solid* Steel.

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HIGH SPEED—Guaranteed to outperform any other Chipper Knives on the market. *Solid* Steel unless otherwise specified. Preferred by many users despite the price—double that of the Regular grade.

Prices will be quoted on request

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Silver Steel
SAWS

CERTIFIED SAWS, SAW TOOLS, MACHINE KNIVES, ETC

PERSONALS

DR. CARPENTER JOINS SOUTHLAND

Widely known throughout the paper industry for his work in connection with the late Dr. Herty's successful experiments, Dr. Charles H. Carpenter, technical director of the Herty Foundation Laboratory in Savannah, Georgia, has resigned his position to accept a position as chemist with the

Dr. Charles H. Carpenter

newly-formed Southland Paper Mills of Lufkin, Texas.

Dr. Carpenter was regarded by Dr. Herty and by those associated with him in the work of the laboratory as one of the country's outstanding men in the technical field. He came to Savannah in August, 1936, as chief chemist of the laboratory and during the early part of 1938 was made Dr. Herty's assistant director. After Dr. Herty's death he served for two or three months as acting director and, last October, was placed in entire charge of the technical end of the work as technical director.

Wm. Allen Succeeds Dr. Carpenter

The Herty Foundation Laboratory has named William F. Allen, formerly chief chemist of the laboratory, acting technical director. As such he will have charge of the research which was under the supervision of Dr. Carpenter. It was also announced that Donald R. Brewster, field director of the Savannah laboratory, had resigned and it was reported that he would go into private Forest Consultant work.

Appointment of Mr. Allen brings back to the laboratory one of the original members of the research staff when it was established in 1932. Dr. Herty named Mr. Allen chief chemist and he served in that capacity until 1936 when he left to join the Mead Corporation. Since last November Mr. Allen has been engaged in private investigation work along industrial lines for various parties.

◆

TWO FULL-TIME NURSES PUT ON BY CONSOLIDATED

Consolidated Water Power & Paper Company has modernized and enlarged the first aid and hospital department in its main mill at Wisconsin Rapids, Wisconsin, according to Claims Manager James J. Plzak, who also announced that two full-time industrial nurses instead of one will hereafter be engaged.

Replacing Mrs. Olive Lewis Kiley, who recently resigned the mill nurse position to travel abroad, are Marion Krogdahl, registered nurse, of Virginia, Minnesota, and Eva Hanneman, Wisconsin Rapids registered nurse. Miss Hanneman will take care of the Wisconsin Rapids mill, while Miss Krogdahl will have charge of cases arising in the company's nearby Biron mill. Mr. Plzak, who is chairman of the Wisconsin Valley Safety Conference, states that the new plan will provide for continuous nursing service at the Wisconsin Rapids division.

Miss Hanneman has been employed by the Consolidated company since 1933. She was a graduate of Milwaukee county hospital in 1930. She has been connected with the mill's first aid department the past two years.

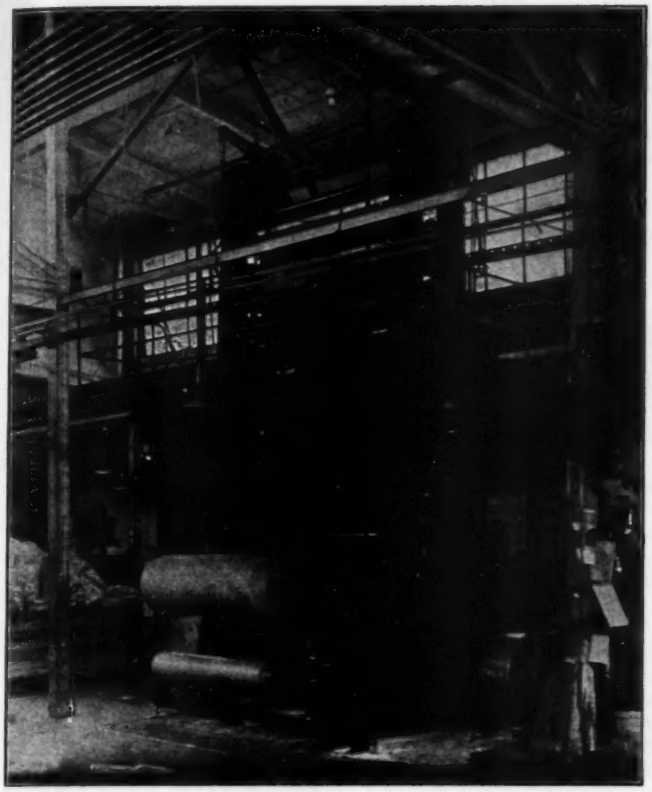
Miss Krogdahl comes to Consolidated from her post as public health nurse in Pine county, Minnesota. She holds a B.S. degree from the University of Minnesota, and received her nurse's training at the Norwegian-American hospital, Chicago, graduating from the training school there in 1934.

Consolidated's first aid room has been enlarged and completely equipped with the most modern devices and supplies, assuring employees of quick and competent attention in emergency cases.

◆

▶▶▶ *D. H. Newell,* formerly with the American Writing Paper Co., and at the time of his death devoting his time to sales research for the International Paper Company, passed away at Mt. Vernon, New York, July 17 at the age of 62 years.

Two registered industrial nurses instead of one have been put in charge of Consolidated Water Power & Paper Company's enlarged and modernized first aid department. They are: Miss Marion Krogdahl (left) and Miss Eva Hanneman.



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DEPENDABLE WATER FILTERS AND PAPER FINISHING MACHINERY

How To Solve Felt Problems

You may know a great deal about felts. But with due respect to your experience, here are five men—Orr Felt men—who may have picked up elsewhere some pointers that may have escaped you.

These Orr men are specialists. Solving felt problems and specifying felts is their business. It, therefore, stands to reason that they can be of invaluable assistance to you.

Feel free to consult your Orr representative. There is no implied obligation. Have him analyse your moisture removal conditions. Check with him on the amount of wear you are getting out of your felts. Even though your costs per ton may seem reasonable, there is always the chance that they can be further reduced—and a sizeable saving effected.

THE ORR FELT AND BLANKET COMPANY
PIQUA - OHIO

ORR FELTS

S. J. Horrell

▶▶▶ *S. J. Horrell,* formerly assistant sales manager for the Power Piping Division of the Blaw-Knox Company, is now sales manager of the company with headquarters at the company's home office in Pittsburgh, Pennsylvania.

◆

NEPCO INCREASES DR. CRAIN'S DUTIES

In line with the continued expansion of laboratory and research facilities of the Nekoosa-Edwards Paper Company, Port Edwards, Wisconsin, Dr. R. C. Crain has been placed in charge of paper development and research work.

Dr. Crain, who came to Nepco early in 1938 as assistant to Dr. T. A. Pascoe, technical director, was with several mills before coming to Port Edwards. He received his doctor's degree from the Institute of Paper Chemistry at Appleton, Wisconsin.

Dr. Crain, who will work under the direction of Dr. Pascoe, who is in charge of all of Nepco's laboratory and technical activities, will be responsible for securing and supplying technical information in connection with special papers and their uses. He will work with the trade on technical problems involving specification papers, serving as research advisor and technician.

◆

KEITH COMPANY MAKES BURKHARDT V. P. AND S. M.

Frederic T. Burkhardt of Holyoke, Mass., has been elected vice president and general sales manager of the Keith Paper Company of Turners Falls. He has been associated with the company as sales agent for the past 16 years under the name of F. T. Burkhardt, and conducted an office in Holyoke. The office will be continued in that city and expanded under his direction.

Mr. Burkhardt has been connected with the paper industry throughout his life, and was associated with the Parsons Paper Company of Holyoke for 20 years prior to becoming connected with the Keith company.

◆

LOCKWOOD MADE TREASURER OF CONSOLIDATED

Filling the vacancy caused by the passing of L. W. Newcomer on May 23, the board of directors of the Consolidated Paper Company, Monroe, Michigan, recently elected Albert H. Lockwood, a vice president of the paper company, treasurer of the concern. Mr. Lockwood resigned his post as vice president to accept the treasurer's position. In addition to Mr. Lockwood's appointment, it was also announced that J. C. Bulis, another vice president, had tendered his resignation to retire from active business. J. B. Taft and L. B. Maurer were elected vice presidents to fill the vacancies.

◆

▶▶▶ Now general sales manager of the Riley Stoker Corporation, Worcester, Massachusetts, is *Roger W. Andrews,* formerly associated with the Blaw-Knox Company and the Western Division of the Combustion Engineering Company. Mr. Andrews has had extensive experience in the steam power field.

◆

GRAY PRESIDENT OF RIVER RAISIN

One of the original five founders of the River Raisin Paper Company, Monroe, Michigan, J. Frank Gray is now president, succeeding the late G. H. Wood (see Necrology). Mr. Gray has held the office of vice president of the company since commencement of operations.

The board of directors also elected Charles L. Wood, son of the deceased president and general manager, to fill the office of general manager. Mr. Wood, who has been with the company for 22 years, has been vice president in charge of purchases for about 13 years and to these duties have now been added those of general manager. In addition to Mr. Wood's appointment, it was announced that Edward C. Hollingsworth, general sales manager for the River Raisin company, had been elected to fill the vacancy on the board of directors caused by the passing of Mr. Wood, Sr. J. W. Walter, son of one of the original founders, continues in the office of secretary-treasurer.

Albert H. Lockwood

◆

E. S. DUNBAR'S POSITION CHANGED

Advertising manager of both the Crocker-McElwain Company and the Chemical Paper Manufacturing Company of Holyoke, Massachusetts, for the past 11 years, Edson S. Dunbar has been transferred to the former company and has assumed his duties as advertising and sales promotion manager.

Mr. Dunbar, who is well known by reason of his activity in the Paper Makers Advertising Association, of which he is vice president, and the International Direct Mail Advertising Association, was formerly Southern representative for both the Holyoke mills. The Southern territory has been taken over by Ernest A. Stache, of the sales promotion department, who is in turn, succeeded by Howard H. Wyllie.

◆

▶▶▶ *John F. Taylor,* recently retired as secretary and sales manager after 59 years with the E. B. Eddy Company, Ltd., of Hull, Quebec, was appointed a vice president on July 1.

◆

▶▶▶ *Paul Torre,* associated with the A. E. Staley Manufacturing Company, Decatur, Illinois, for the past nine years, has severed his connection with the concern and is now located in Niagara Falls, New York. Mr. Torre was connected with the Paper Mill Division of the Staley organization.

FELTS

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Long Life Felts

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The importance of fine quality felts is universally recognized in the manufacture of paper. The quality, speed and long life of the felts have a definite influence on production costs as well as paper quality and finish. We are greatly pleased with the universal acceptance of our felts in the paper industry throughout the country.

For finest quality felts—that assure long life, dependable service and high speed production—select felts made in SKANEATELES FALLS, N. Y.

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Bars, Shapes	Shafting	Welding Rods	Alloy Steel
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Machinery in Plant of

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Consisting Principally of

1—Fourdrinier Paper Machine with 22" suction couch, 18" suction press, second press, smoothing press, and 26 dryers 48" x 102". Calender, Reel and Marshall Drive.
1—Fourdrinier Paper Machine same except dryers 102" face.
1—Fourdrinier Tissue Machine with pick up attachment, one press, 13 dryers 48" x 101". Calender, Reel, Winder and Drive.
14—Beaters, 56" x 30".
4—Emerson Jordans, large size.
1—Voith Pulper (with anti-friction bearings).
1—62" Cameron.
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1—48" Acme Cutter.
1—Farrell Roll Grinder with crowning attachment to grind up to 24" x 120".
Sulphite Pulp Mill equipment for 60 ton capacity consisting of saw, barkers, chippers, Waterville Chip Screens. Sulphur burner 36" x 12'. Jenssen gas cooler. Barker acid tower. Digesters.
15—12-plate screens
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4—Impco Centrifugal Screens
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OTHER COUNTRIES

JAPAN FIGHTS OJI PULP MONOPOLY

Restriction of the Oji Paper Company's monopolization of Japan's pulp industry is indicated by the recent news of a second "national policy" pulp manufacturing concern now being encouraged by the Japanese Government. A report from Assistant Commercial Attache D. W. Smith, Tokyo, revealed that the Oji organization produced 775,000 metric tons of pulp last year which represented approximately 77 per cent of all the wood pulp produced in the Japanese Empire.

It will be remembered that in the spring of 1938 the Japanese Government caused to be established, the National Policy Pulp Industry Company which was financed by rayon and staple fiber manufacturing concerns and which has scheduled an output of 162,000 metric tons for 1942. In the meantime both the Oji Paper Company and the Department of Commerce and Industry have been endeavoring to improve their respective positions in the pulp field, the former by purchasing the controlling interest in the Japan Pulp Company and the latter by mediating for the purchase of the Nisso Rayon Pulp Company and the Hokuotsu Pulp Company by the National Policy Pulp Company. Failure of the Government's efforts to obtain control of the Nisso and Hokuotsu concerns resulted in the decision to organize a second "national policy" concern with the backing of the Mitsubishi interests and independent paper manufacturers.

Reports state that the new firm will be capitalized at 20,000,000 yen ($5,500,000) and that after its establishment, it will probably be merged with the original "national policy" company which has an authorized capital of 80,000,000 yen ($21,600,000).

◆

RUMANIA MAY EXPAND ITS PULP INDUSTRY

The production of wood pulp in Rumania is destined to record considerable expansion during the coming years, according to a report from the American Consulate General. This expansion will be due to the projected expansion of the artificial fiber industry. At present, the Rumanian pulp and paper industry embraces about 150 plants which employ about 14,000 workers. Since 1938, paper output has increased under the improved market conditions and the industry has been operating at capacity. At present the prospects are that Germany will increase its imports of wood pulp from Rumania because of the fact that the bi-lateral system, which provides for the exchange of merchandise in lieu of money, may encounter difficulties when used in connection with other supplying countries.

◆

MAY BUILD PAPER MILL IN CHILE

A new wood pulp and paper mill will be established in Chile by 1940 if the expectations of a newly-formed company are realized. The Chilean mill, addition to producing wood pulp and insulating papers, plans to make paper for magazines, blank books and similar uses. It was reported that the company has acquired 45,000 acres of timberland from which a soft wood known as olivo will be obtained. This represents the first serious attempt to manufacture paper from softwood trees which are comparatively numerous in south central Chile.

◆

ITALIAN NOTES

Co-operating with the national policy of reduction of imports in every line, Italian chemists and technicians are bending every effort to further the domestic production of cellulose. In recent months, special attention has been given to the extraction of cellulose from hemp wastes, vine cuttings, corn straw, rice straw, Indian corn stalks, sugar sorghum stems, etc. The following production methods have been forwarded from an Italian correspondent of THE PAPER INDUSTRY AND PAPER WORLD.

Hemp Wastes

Under one method, hemp wastes are treated for five hours at 140 to 145 degrees C. under a pressure of 5 to 6 atmospheres in an autoclave, in which there is a solution of caustic soda of from 2 to 2½ per cent and to which is added a small quantity of sulphide of soda (from 5 to 10 grams per liter). The product obtained is washed and broken up further and the resulting pulp is then treated for three or four hours with a solution of hypochlorite of soda containing from 2 to 5 grams of active chlorine per liter. Caustic soda is then added and a second treatment of hypochlorite solution is given. The material is finally washed with water and bisulphite of soda which neutralizes the active chlorine remaining in the fiber. The cellulose obtained can serve for the preparation of paper and short fiber cuprammonium rayon, it is reported.

Vine Cuttings

From trials executed at the firm of Udine (Veneto), it has been reported that the dry cuttings of vines can supply 30 per cent cellulose and that they produce a longer fiber than that obtained from straw or poplar trees. It was also reported that the cellulose thus produced can not only be used for paper but for rayon also. It is calculated that the vine cuttings in Italy can yield about 600,000 tons of cellulose a year.

◆

IMPORTS FROM FINLAND INCREASE

Shipments of paper from Finland during the month of April amounted to 59,730 tons, the highest on record for any month this year, says a report from the Forest Products Division of the United States Department of Commerce. Total exports of paper from Finland during the first five months of the year amounted to 283,978 tons. By comparison, United States exports of paper were about 109,000 tons, or 62 per cent less than Finland's.

The increased exports from Finland was the result of low stocks in importer's hands, necessitating new purchases for early delivery. Imports of wood pulp from Finland amounted to 15 per cent of all wood pulp imports into the United States in 1938.

◆

▶▶▶ NETHERLANDS INTERESTS are contemplating the construction of a new paper mill in West Java, according to the U. S. Department of Commerce. The mill is to produce low-priced packing paper. Rice straw will be used as raw material.

ADVERTISING PAGES REMOVED

NEW ENGLAND AGITATORS
serve paper mills well

Installation Check-Up

Customer: [redacted] Mechanicsville, N.Y.

Application: Clay mixing - 1 lbs. to gallon of water with some starch.

Tank: Steel, 6'x6' coned 45° with 54" flat bottom, closed top. Tank in two 36" sections. 4 - 4" baffles.

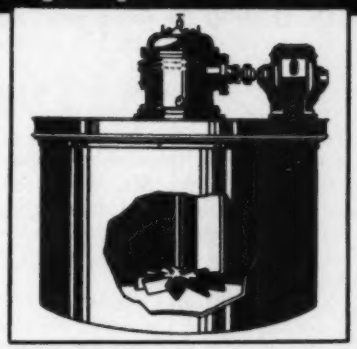
Agitator: 24" C. I. turbine, 18" propeller 4' from bottom.

Speed: 94 R.P.M.

Drive: New England WT-17, ratio 10.5 to 1.

Motor: 3 H.P., 1450 R.P.M.

Results: Agitation satisfactory.



Faster mixing and more uniform densities have been reported from many paper mills after installation of New England Agitating Equipment especially designed for clay or size mixing.

★

80 Page Catalog 380 with Agitation Engineering handbook section free. Write for a copy.

Installation Check-UP

Customer: [redacted] Fitchburg, Mass.

Application: Mixing 2 lbs. clay to the gallon. Used both for mixing and storage.

Tank: 12' deep, 10' dia., with fillet 18" wide, 45° in outer corner, four lines of baffles projecting inward 6".

Agitator: 36" dia. 6-blade, C. I. spiral turbine and 40" diameter., 30 pitch, 3-blade, C.I. propeller, 6' above turbine.

Speed: 100 R.P.M.

Drive: New England BT-47, ratio 11.33 to 1.

Motor: 15H.P., 1140 R.P.M. Power input about 12 H.P.

Results: After standing and allowing clay to settle it can be brought into uniform suspension in 6 minutes.

NEW ENGLAND TANK AND TOWER CO. MAIN OFFICE AND WORKS EVERETT, MASS.

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Facts About Accidents in the Paper & Pulp Industry

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What were the outstanding facts about accidents in the Paper & Pulp Industry during 1937? How did they compare with other industries? How did your plant's record compare with others?

These and many other revealing and important data are presented in detail in "1937 Accident Rates In the Paper & Pulp Industry", recently published by the National Safety Council. We'll be glad to send a copy FREE to any Safety Director or other plant executive upon request. Simply drop us a line on company letterhead.

PAPER & PULP SECTION NATIONAL SAFETY COUNCIL TWENTY NORTH WACKER DRIVE CHICAGO, ILL.

NECROLOGY

GEORGE W. WOOD

George Harley Wood, one of the paper industry's best known figures and president of the River Raisin Paper Company, Monroe, Michigan, since 1914, passed away July 9 in Detroit after a short illness. He was 68 years of age.

Mr. Wood was literally born in the paper industry. His father, George Phillip Wood, was the president of the Kokomo Paper and Pulp Company, Kokomo, Indiana, and George Jr. entered his father's mill in 1888. When Mr. Wood was 26 years old, he leased the Howard Paper Company of Kokomo from the receiver and operated it in partnership with the late I. N. Miller. A year later the company purchased the Indiana Fibre Board Company plant and operated it until 1900 when the business was consolidated with the Knerr Paper Company of Dayton, Ohio. Mr. Wood became general manager and vice president of both the Kokomo and Dayton plants.

The ability of the young paper executive eventually brought him in contact with E. C. Rauch of Monroe, late president of the Consolidated Paper Company, who induced Mr. Wood to take a stock interest in the Boehme and Rauch Company, forerunner of Consolidated. In 1906, Mr. Wood sold his interest in the Knerr organization to serve as director of the Boehme and Rauch Company and superintendent of the paper mill division.

The River Raisin Company was organized in 1910 by a group of five men including Mr. Wood, who became vice president. In 1914, he became president and general manager of the concern, a position he has occupied continuously since.

Mr. Wood entered the Southern paper industry the same year he was elected president of River Raisin. His initial step was the rebuilding of the Louisiana Fibre Board Company of Bogalusa, Louisiana. In 1916, he built and organized the Bogalusa Paper Company for the Great Southern Lumber Company. These two plants were the first to successfully make sulphate liner in the South. Mr. Wood severed his Southern connections in 1918.

It was in 1916 that Mr. Wood organized the G. H. Wood Paper Company, which was later consolidated with the River Raisin company. In the growth of the parent organization, Mr. Wood opened manufacturing and distributing plants at Cleveland, Ohio, and Washington, Pennsylvania.

In addition to his many paper and pulp activities, Mr. Wood was also identified with many other business and civic developments of Monroe. He was a vice president of the Dansard State Savings Bank, a leading figure in the organization of the Monroe Country Club, and the operator of an extensive dairy farm. He was an enthusiastic yachtsman and served as commodore of the Monroe Yacht Club. He also was a liberal contributor to local and civic needs of all kinds.

Mr. Wood is survived by his widow and one son, Charles H. Wood, who is vice president of the River Raisin Paper Company, in addition to a brother and three sisters.

CONVENTIONS AND COMING EVENTS

Sept. 8-9—American Pulp & Paper Mill Superintendents Association, Fall Meeting, New York-Canadian Division, Mount Royal Hotel, Montreal, Canada.

Sept. 12-14—Technical Association of the Pulp and Paper Industry, Fall Meeting, Syracuse Hotel, Syracuse, New York.

Sept. 18-20—National Paper Trade Association, Stevens Hotel, Chicago.

Sept. 20-22—National Industrial Advertisers Association, Annual Conference, Hotel New Yorker, New York City.

Oct. 12-13 — Packaging Ihstitute, Inc., First Annual Meeting, Edgewater Beach Hotel, Chicago.

Oct. 13-14—American Pulp & Paper Mill Superintendents Association, Fall Convention, Southeastern Division, Durham, North Carolina.

Oct. 16-20—National Safety Congress and Exposition, Atlantic City, New Jersey.

Dec. 4-9—Seventeenth Exposition of Chemical Industries, Grand Central Palace, New York City.

Jan. 22-26—Sixth Annual Heating and Ventilating Exposition, Lakeside Hall, Civic Center, Cleveland, Ohio.

◆

▶▶▶ On July 17, *Carl Lager,* president of the Morris Machine Works, Baldwinsville, New York, passed away. Mr. Lager had been associated with the company for nearly fifty years.

▶▶▶ *Downer H. Newell* of Philadelphia, Pennsylvania, former assistant general manager of the American Writing Paper Corporation, of Holyoke, Massachusetts, died in Philadelphia on July 14 after a two months' illness. Mr. Newell was manager of the Philadelphia branch of the International Paper Company, of New York City, a firm which he joined immediately after leaving the AWP., in 1921. Mr. Newell was a native of St. Johnsbury, Vermont.

◆

▶▶▶ Formerly chief engineer and later consulting engineer of the Shawinigan Water and Power Company, *Frederick Thomas Kaelin* passed away at his home in Montreal on July 27. He was 65 years of age. Mr. Kaelin was best known in the paper industry as the inventor of the electric steam generator, many units of which have been installed in Canadian pulp and paper mills. Mr. Kaelin is survived by his widow.

◆

▶▶▶ *Edward G. Lloyd,* aged 58, partner in the firm of Bulkley, Dunton & Co., New York, passed away July 17, at Summit, New Jersey, after a year's illness. He had been general sales manager of the company, and a partner since 1928. By reason of his company's interest in various paper mills, he was an officer of several paper making companies.

◆

KNUT LUNDAHL

Well known in paper and pulp circles, Knut Lundahl, vice president and director of the Cellulose Sales Company, Inc., New York City, passed away July 17 in Stockholm, Sweden.

Mr. Lundahl was born in Sweden in 1888 and became associated with the Swedish mill, Munksjo, in Gothenburg. After having spent several years in other lines, both in Sweden and other countries, he again became associated with the paper and wood pulp business and with the formation of the Swedish Cellulose Company in Stockholm, became connected with that company as their special representative in New York, later becoming assistant manager, manager of sales for the American market, and eventually vice president. He is survived by two brothers who reside in Stockholm.

◆

▶▶▶ *Luke Whalley,* mill superintendent from 1900 to 1927 at the E. B. Eddy Company, Ltd., Hull, Quebec, passed away on July 28 due to injuries received in an auto accident. He was 75 years old and had lived in Dexter, New York, since his retirement.

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Connect your drying roll bearings to header lines with Rex-Bellows STAINLESS STEEL EQUALIZERS. Due to bellows construction, these units take axial as well as radial motion; require much shorter lengths to compensate for offset in piping; do away with necessity of looped connections and consequent frequent failures. These Equalizer units have all the qualities of 18-8 stainless steel—corrosion resistance; durability; higher resistance to fatigue, vibration and continued bending movement. Available as straight bellows or in divided bellows form, with circular resistant welded fitting attached as illustrated. Write for information on these time-and-money-saving units.

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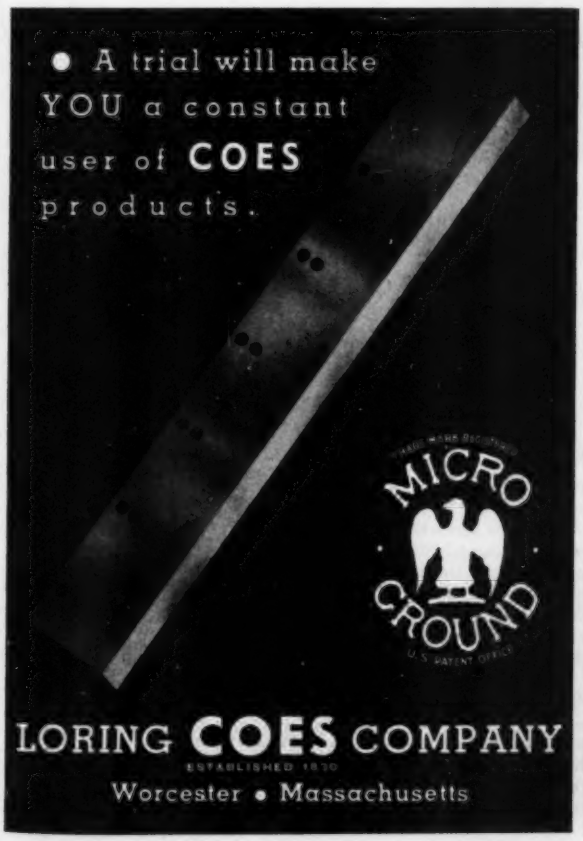
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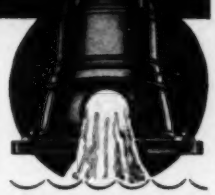

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NEW EQUIPMENT AND SUPPLIES

Simple De-humidifier

A simple de-humidifying unit, known as the *Aqua-Sorber,* has been announced by the Aqua-Sorb Company, 21 South 16th Street, East Orange, New Jersey. The device is built in two models, individually designated as BH-100, and Junior. The BH-100 model consists of a metal cabinet, approximately 15 inches square and 42 inches high, on the outer front side of which is mounted an adjustable humidistat and on the inside center top of which is mounted an electrically driven, centrifugal blower. This blower, controlled by the humidistat, draws moist air upward through the cabinet. The cabinet contains a filter bed of absorbent material upon which is placed a 100 lb. charge of "Aqua-Sorb," a specially prepared material in lump form which extracts moisture from the air coming in contact with it. The moisture absorbed forms a brine which flows downward through the filter bed, picking up more moisture and becoming progressively more and more diluted until it is finally discharged into a drip-pan or drain connection.

The Junior model, containing 40 lb. of Aqua-Sorb, and filter bed, is operated ordinarily without blower or humidistat; but can be equipped with either or both, if required. This unit, mounted on a drip-pan, 12 inches square and 8 inches deep, is of perforated metal construction, 10 inches square and 18 inches high. There also is a 2-inch square stack for additional exposed surface area.

These units, according to the manufacturer, will overcome the usual troubles from dampness and high humidities; and are especially adapted for storerooms, processing rooms, etc.

New Cord for V-Belts

The Dayton Rubber Manufacturing Company, Dayton, Ohio, has announced the development of a new cord, known as *Daytex Cord,* for use in the neutral axis of Dayton Cog-Belts. According to the manufacturer, the new cord has improved tensile strength, lower stretch, and minimum tendency to stretch.

Thermal Converter

A thermal converter, known as the *Thermoverter,* has been announced by The Bristol Company, Waterbury, Connecticut. This device, when connected in an alternating current metering circuit (secondaries of a conventional set of instrument transformers) performs a proportional conversion from a. c. watts to d. c. millivolts. With it, a power load may be directly expressed by a d. c. potential difference suited to transmission over considerable distance and for totalization.

There are no make-and-break contacts, field adjustments, or moving parts.

The time of response between a change of a. c. power load and the development of a proportional emf in the Thermoverter is less than ½ second.

Flight Conveyor

Moline Malleable Iron Company, St. Charles, Illinois, has announced a flight conveyor which operates in a trough, either horizontally or at inclines up to 35 deg. Each flight consists of an arm or body which is provided with a throat section having two thick-walled pockets, two half or loop links with shouldered ends that

fit into the pockets, and a key and cotter pin that hold the loop links in place. The loop links are available with various pitches to coincide with the pitch of interconnecting chain being used.

Discharge is made either over head pulley or through gates in bottom of the trough. When separation is desired, the fines can be discharged through perforated plates, the larger material being carried along for discharge at a more distant point.

Stainless Steel Pump

A stainless steel pump, designated as Model 2K, has been announced by The Duriron Company, Dayton, Ohio. The pump is made of Durimet (a nickel-chromium-molybdenum low carbon alloy steel), Durco KA2S (18 per cent chrome, 8 per cent nickel low carbon steel), or Durco KA2SMo (18 per cent chrome, 8 per cent nickel, 3 per cent molybdenum low carbon steel). Both suction and discharge are 6 in. integral flanged openings. Impeller may be closed or open—up to 13½ in. in diameter for the closed, and up to 14 in. for the open. The pump is equipped with ball-bearing protected by dust and oil seals. Capacities of the pump range up to 1700 g.p.m. for heads up to 140 ft.

Constant-Level Oiler

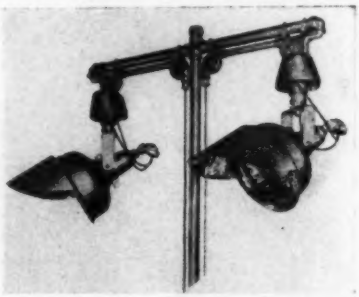
A line of visible automatic constant level oilers, with so-called unbreakable reservoirs and adjustment oil level feature has been announced by the Trico Fuse Manufacturing Company, Milwaukee, Wis. The reinforcing ribs of each reservoir give added strength and offer a good grip when handled. The reservoir is removable for convenient cleaning and refilling. All bottles, made in one, two, four and eight ounce capacities, are interchangeable.

Corrosion Resistant Bearings

Bantam Bearings Corporation, South Bend, Indiana, has announced production of bearings made of "K" Monel in all required sizes and types. It is stated that this nickel-copper alloy can be heat-treated to provide a hardness not ordinarily associated with non-ferrous bearing materials, and that it withstands the action of many acids, most alkalies and a wide range of gases. Bearings made of this alloy have been suggested for such applications as on jordans, paper machines, and rotary screens.

Improved Lamp Lowering Equipment

Thompson Electric Company, Cleveland, Ohio, has announced improvements in design of its line of lamp lowering hangers, lamp shock absorbers, and related accessories. The improvements permit the lamp lowering hangers to be used as readily and as successfully with floodlights as with reflector units. Mounting may be at any height required, and a number of floodlight units may be mounted on a single pole. The new equipment, in a range of models to fit almost every combination of wiring, mounting and operating conditions, also provides more protection against dirt and corrosion.



Flow Recorder

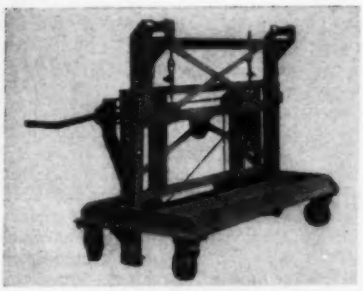
A flow recorder, which draws a graph of rate of flow against time instead of recording total flow over a given time, has been developed by the Bailey Meter Company,

Cleveland, Ohio. This device employs the Bailey Synchro-Meter electrical transmitting method. It is attached to a displacement meter body. The displacement meter register is raised by a filler block to afford room for bevel gears and a short shaft extension is used to drive the register of the displacement meter. The bevel gears drive a shaft which operates the Synchro-Meter unit. No change or modification of parts of

the displacement meter is required for the attachment of the device. According to the manufacturer, this Synchro-Meter device is particularly useful when it is desired to indicate and record the instantaneous rate of flow of fluid which cannot be measured satisfactory by orifice type meters, and also may be used as a tachometer for indicating or recording the instantaneous speed of any rotating shaft, being especially desirable for low speed (1 to 5 r.p.m.) measurements.

Paper-Roll Shaft Dolly

Economy Engineering Company, 2653 West Van Buren Street, Chicago, has announced a dolly for the handling of paper-roll shafts. Designed for use primarily around corrugating machines, the dolly has an overall height of only 29 inches. Through the use of an inverted frame, however, which is supported by two cables



winding on one drum, a roll shaft may be lifted to a height of 41 inches or lowered to a point 19 inches above the floor. Elevation or lowering is accomplished through the turning of a hand crank which can be located at either end of the hoisting unit. The hoisting unit is mounted on four swivel casters that permit ready movement of the dolly.

Portable Electric Hoist

A portable electric hoist, designated as the *Comet*, has been announced by the Chisholm-Moore Hoist Corporation, 402 Fremont Avenue, Tonawanda, N. Y. Construction of the hoist is compact and rugged. Precision ball bearings are provided at each rotating point. Gears are machined of heat-treated alloy steel. Controller, with patented "delayed reversing" feature, operates with one hand and affords sensitive control for lifting the load distances of a fraction of an inch. The brake is smooth, quick-acting, and posi-

tive. The chain is strong, flexible and kink-proof. Upper and lower safety stops automatically limit travel of load hook. The hoist is offered in four capacities: 250, 500, 750, and 1000 lb., the 500 lb. size weighing only 85 lb.

Jack for Skid Platforms

The Yale & Towne Manufacturing Company, Philadelphia, has announced the addition of a jack, designated as a new *Rollway Jack*, for use with Rollway Re-Nu Top Skid Platforms. The jack is mounted on rubber-tired wheels revolving on Hyatt roller bearings set on a high carbon axle. All main engineering members are of heat treated alloy steel. The handle is the Yale "Safeti Sure" balanced type with equalizing spring

inside the tube. A wide open prong pocket sets in front of the hole to guide the connecting skid platform. Locking is automatic. When the handle is pulled down, the load goes up and is locked in the elevated position with the handle free. The load then can be pushed with the handle down towards the operator or in the vertical position; or it can be pulled. To lower, the operator depresses the handle until the weight is felt on his hand, then raises the handle and lets the load drop to the floor under his control.

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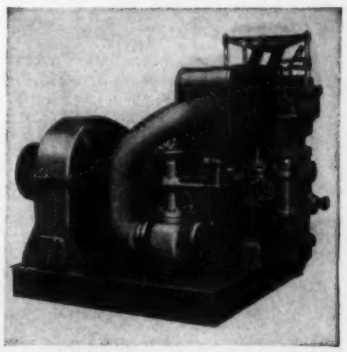
General Purpose Steam Turbines

Following extensive field experience in service, improved multi-stage steam turbines for general purpose drives have been announced by Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa. Modifications of one basic design provide for condensing, condensing extraction, non-



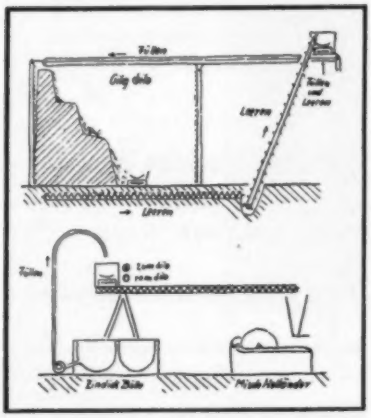
condensing, non-condensing extraction or mixed pressure service. The steam turbines, known as Type "M," can be supplied for steam pressures up to 650 lb., steam temperatures to 750 deg. Fahr., exhaust pressures to 200 lb., vacuum to 29 in. of mercury, extraction pressures to 20 lb., and in a range of sizes from 100 to 2000 hp. and a speed range from 100 to 5500 r.p.m.

TECHNICAL DEVELOPMENTS

The following abstracts are of the latest developments found in the foreign press.

Storage of Mechanical Pulp in Gilg-Silos

The silo devised by Gilg is shown schematically in Figure 1, which indicates the filling (Füllen) and emptying (Leeren) of the mechanical pulp, together with the thickening vat (Eindick Bütte) and the hollander. The pulp keeps very well, for any reasonable length of time, under the storage conditions furnished by the silo, and is in such form that suspensions in the beater offer no difficulty. Full description of the equipment and its use are given. Anton Holzhey. Papier-Fabr. 37 Tech-Wiss. Tl. 177-80 (1939).



Control Method of Testing for Corrosion

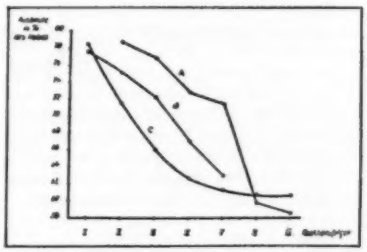
There is no general quantitative method. Even when a definite amount of a standardized corroding agent like 0.1 N HCl is used, the results vary, depending on changes in technique. A valuable method (which is far from perfect but which has a practical significance) involves immersion of the sample in the corrosive fluid, for a definite time period, and noting the loss in weight. The article deals with such a method, its advantages and the various sources of error. In determining the rate of corrosion, the losses in weight are not necessarily a measure of the resistance to corrosion of the sample, but of the rate of migration of the acid used. Such a corroding acid must be easily accessible to the entire surface of the sample, which must be *suspended*, not laid, in the solution. Not less than 10 c.c. of the acid solution or less than 1 sq. cm. of area of the sample to be tested should be used, and the techniques must be standardized. The dimensions of the flask, time of immersion, etc., are discussed. The results are given in terms of grams per sq. meter, per year (loss of weight) or in terms of depth of corrosion, i. e., mm. per annum, and these are applicable only to a corrosive action distributed over the entire surface and not to holes caused by acid attack, or intercrystalline corrosion. Resistance to corrosion, in general, gives better results than measurement of rate of corrosion. To reduce the time factor, the dominating chemical reaction may be increased. Elevation of temperature and concentration, however, do not always give satisfactory results. Sv. Brennert Tekn. T. (Kemi) 69, 5-8 (1939); through Papier-Fabr. 37, Vol. 23-4, (Abstracts) 73, (1939).

Cooking Tests in Sulphate and Sulphite Pulp Production

Cubical measurement frequently leads to erroneous views of wood consumption since the volumes of various grades of a wood may vary widely. The samples examined were Finnish spruce with varying specific gravities and width of annual rings, in the case of sulphite cooks. In sulphate digestions, the woods used were Finnish pines. Knot wood was also used in the test cooks. With standard sized chips in the laboratory digesters which were divided into two compartments, to secure parallel results, the sulphite cooks were carried out with liquor containing 211 g. SO_2, and 44 g. CaO per kg. dry wood. The total alkali contents in 3 sulphate cooks were 240 g., 180 g., and 150 g. per kg. of dry wood (using 25 per cent sulphidity). The highest yields were obtained from normal wood having a 1-2 mm. annular ring widths. Highly lignified chips from knot wood gave yields that were 11-13 per cent lower than normal. Yields of knot free pulp (either sulphite or sulphate) seem to have a fairly constant relationship to the bone dry weight of the wood (minor fluctuations were not significant). The relationship of extractives, ash, etc., and the type and degree of cook are discussed. Strength tests on pulp sheets showed slight variations for different qualities of the wood, excepting when knot wood pulp was examined. This was very weak. T. Wegelius Finnish Paper Timber J. 1939-No. 7A, 92-101; through CA 33, 5654 (1939).

Holocellulose from Beechwood

Modifying Ritter's methods for preparing holocellulose, the authors introduced chlorine gas through a wash bottle under diminished pressure. The moist sample of wood shavings reacts (in an evacuated system) with relatively slight temperature rise, which is a marked improvement. The apparatus used is fully described and illustrated. Schematically the steps are as follows:—chlorination, washing with water, alkaline treatment, washing, chlorination, etc. Each chlorination period was kept constant at 30 minutes, but the total time for the isolation varied considerably, and a number of chlorinations were usually required before the lignin content approached zero. Using as a total 20 g. of wood, the holocellulose content (calculated on a lignin-free basis) ranged from 76-77 per cent when NH_4OH, alcoholic ethanolamine and $Ca(OH)_2$ were used in the basic treatments. (However in these cases the residual lignin contents varied considerably and were respectively 4.6; 0.5, and 4.7 per cent. Using a 5-gram wood sample and Na_2CO_3 solution, the lignin content was 1.5 per cent and the holocellulose (lignin free) was 77.6 per cent. Repeated treatment with alkaline solutions gave a series of stages, in the final one of which the residues correspond to 60.7 per cent (with NH_3), 58.6 per cent



[with $Ca(OH)_2$] and 63.0 per cent (with Na_2CO_3 solutions). The accompanying illustration shows the number of alkaline treatments of the holocellulose with $Ca(OH)_2$ (graph A); Na_2CO_3 (graph B) and NH_3 (graph C), in which the number of treatments is plotted against percentage of yield. (C) gives a smooth curve, while (A) evidently shows marked stages, with a sharp drop between the fifth and sixth treatment. NH_3 was found unsuitable for studying the mechanics of the decomposition of holocellulose, for which however $Ca(OH)_2$ seems eminently suitable. Evidently Na_2CO_3 effects the minimum degradation. The fibers of the holocellulose seem to cohere, as indicated by attempts at mechanical or chemical defibering, where the lignin content is so slight that its importance appears negligible. However here a definite hemicellulose fraction seems responsible, although just which portion plays this role has not been determined up to the present. K. Storch and O. Möller. Papier-Fabr. 37, Tech-Wiss Tl. 213-220 (1939).

Mercury, Iodine Derivatives and the Structure of Lignin

This is, in part, the report of a re-investigation, due to various criticisms by Hilpert and his co-workers. Methyl lignin was treated with boiling alcoholic mercuric acetate, adding acetic acid during the reaction, and washing the resultant products with CH_3CO_2H. On repeating the procedure a number of times, the per cent of mercury in the lignin compound finally reached a maximum, indicating that a true chemical reaction had taken place and that the possible admixtures of simple mercury compounds play minor roles. The mercury union with lignin appears to be similar to

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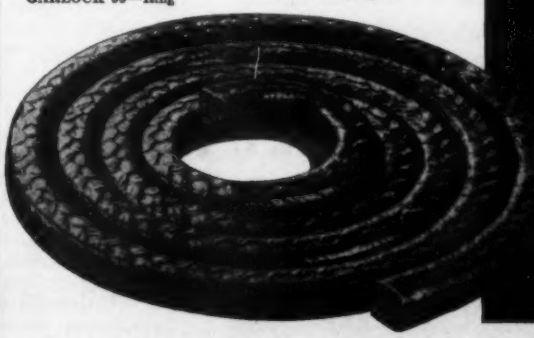

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that obtained under comparable conditions with vanillin and homoveratrole. This is shown by converting the respective mercury compounds into iodine compounds by treatment with iodine-potassium iodide solutions. These iodine compounds are extremely stable, indicating a substitution on the aromatic nucleus; indirect evidence that the mercury derivatives are true compounds.

The authors give detailed accounts of how these mercury derivatives of lignin were prepared. They compare them to the corresponding vanillin and homoveretrole derivatives with respect to per cent Hg, to their reactvity with 5 per cent HCl, and to their conversion to the iodine compounds. Other experiments are described, all of which give further evidence of the aromatic nuclei in lignin. It is clear that on mercuration, a hydrogen atom in spruce methyl lignin is replaced by the residue—Hg-OOC-CH_3 (giving a compound containing 43 per cent Hg for methyl lignin, and 40 per cent iodine when this mercury is replaced). By distilling spruce lignin, originally isolated by cuprammonium hydroxide (cuproxamine lignin) with 28 per cent H_2SO_4, 3.2 per cent formaldehyde is obtained.

The spruce wood from which this lignin was obtained, yielded 0.9 per cent formaldehyde, which checks the figure for lignin. However, this alone is no evidence that the methylene dioxide residue is present in the lignin nucleus. A reaction has been devised which shows definitely the methylenedioxide group (as in piperonyl) is actually present. Compounds which contain it, when heated with aniline and aniline hydrochloride give acridan with the loss of one molecule of ammonia. Cinnamic alcohol and related compounds, which have no methylene dioxide group, do not yield this. Commercially prepared lignin, which has lost formaldehyde during its formation, also fails to give it. However, other lignin preparations (cuproxamine lignin) give rise to acridan. However, when this lignin is suspended in liquid NH_3 at minus 50 deg., and subsequently treated with metallic potassium, the resultant product no longer gives the formaldehyde reaction. Similar treatment of piperonyl-like residues are present in cautiously isolated lignin. Karl Freudenberg and Hans Müller. Ber 71 B, 2500-4 (1938); C. A. 33, 1492 (1939); also Freudenberg. Papier-Fabr. 37 (Tech-Wiss Tl.) 28-9 (1939).

Yield and Quality of Bleached Pulps

This is a discussion by two men following a report by Hägglund. F. Loschbrandt, who is an expert in bleaching sulphate pulps, states that each pulp examined by him showed a decided optimum in chlorination. Slight overchlorination has little effect on the properties of the stock, since the first excess of chlorine causes further reactions with by-products already formed by the bleach. Past a certain point, however, the excess chlorine attacks the pulp, and the danger spot in the sulphite bleaching process is the treatment with alkali.

Of the two factors time and temperature of bleaching, the latter is the more important. It is essential that there is sufficient alkali present during alkaline treatment (2-2.5g NaOH per 100g dry fiber). Altering the bleaching process beyond that practiced today gave diminished yields or at least no improved ones. The greatest diminution in yield occurs during the alkaline treatment, especially when the temperature is increased, (specific conditions are not given). The two stage bleach suggested by Hägglund, when put into practice appears to be rather sparing in its action. K. av. Schulten discussing the bleaching operation, states that the so-called Bergmann number for calculating the required Cl consumption gives Cl values which were too high in pulps examined by him, especially when the total amount of chlorine used in chlorination and hypochlorite bleach is kept in the right ratio. He found certain exceptions in the case of hard sulphate pulps. He also found that chlorination of a pulp caused no appreciable removal of chlorolignin, which in his opinion renders a multiple stage chlorination useless. In bleaching pine sulphate, when the chlorine content of hypochlorite bleach is increased with increasing (initial) hardness of pulp, there is a tendency towards loss of tensile strength and also of yield.

In practice, every pulp could be bleached to a satisfactory degree of whiteness without loss in tearing or bursting strength, provided the chlorine content of the hypochlorite bleach was so regulated that it did not exceed 1-2 per cent chlorine per weight of fiber, while the remaining chlorine was used in direct chlorination. The hypochlorite bleach effects the reduction of alpha cellulose content markedly. A chlorinated, unbleached pulp pretreated with alkali, with an alpha cellulose content of 96 per cent, had this content reduced to 91-2 per cent by bleaching at 6 per cent stock density, and 35 deg. C. with hypochlorite corresponding to 3 per cent Cl (per weight of pulp). Frequently other sulphate pulps were shown to lose 4-5 per cent of their alpha cellulose by hypochlorite bleaching. Papp.—travaru—tidskr. Finland 20, 668-72 (1938) through Papier-Fabr. 27, (abs) 34-5 (1939).

Acid-resistant Alloys in Sulphite Pulping

The resistance to corrosion of about 60 alloys of copper, lead, tin, aluminum, antimony, and cast iron, as well as steels was tested in the laboratory under sulphite pulping conditions. Those most easily attacked were the non-ferrous alloys. The increase of chromium in iron alloys also increases the resistance to corrosion. The effects of composition and the thermal treatment of alloys on the resulting resistance to acid are discussed. V. V. Andreeva and N. K. Grigoreva. Bunazhnaya Prom. 16. No. 10, 28-34 (1938) through C. A. 33, 5653 (1939).

Cellulose in Wood Bark

Using Kirschner and Hoffer's nitric acid method, the authors isolated cellulose from the bast fibers and the bark of aspen and birch. In general the yield was about 25 per cent, of which 10 per cent was xylan and 90 per cent cellulose. V. I. Sharkov, Muromtseva, V. N. Kalninea and Shchegolikhina. J. Applied Chem. (U. S. S. R.) 11, 1659-64 (1938); cf C. A. 33, 5651 (1939).

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300 HP West. new slip ring motors, 360 RPM, 440/220 volts, type CW. (2)
250 HP G. E. squirrel cage motor, 1800 RPM, 2200 volts, type KT559.
200 HP Westinghouse synchronous motor, 225 RPM, 2200 volts, type HR.
150 HP G. E. slip ring motor, 450 RPM, 440/220 volts, type IM.
150 HP G. E. synchronous motor, 360 RPM, 220/440 volts, type TRC.
75 HP West. slip ring motors, 720 RPM, 440/220 volts, type CW. (3)

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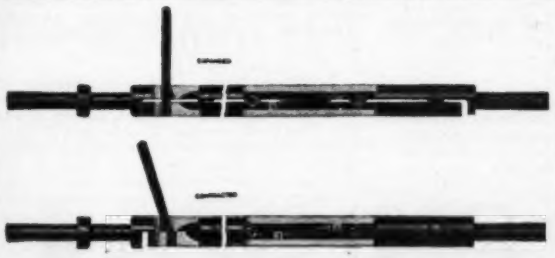

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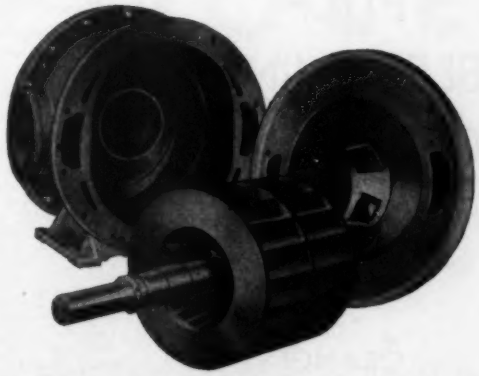

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New Catalogues and Publications

D. M. Bare Paper Co., Roaring Spring, Pa.—This company is announcing the publication of a new book entitled "The 'Book' of Progress 1939," which not only chronicles the history and development of the company, but which also contains descriptions and samples of the company's book paper. The book has been splendidly laid out, is interestingly written and contains much of value to those interested in the general history of book papermaking. The book, plastic-bound in stiff cover of blue and white, commemorates the seventy-fifth anniversary of the founding of the company. It was prepared for the D. M. Paper Company by its advertising agency, Albert Frank-Guenther Law, Inc.

Bridgeport Brass Co., Bridgeport, Conn.—A 52-page technical booklet entitled "Water Pipe Sizes" has been issued lately by this company. The booklet, which is a revised issue, contains, in addition to rules and tables for determining pipe sizes, water supply formulae and numerous tables showing the flow of water in copper water tubes. Considerable space is devoted to technical information on the various brass pipe alloys and copper water tubing and their application for heating, plumbing, industrial piping, etc.

Burt Manufacturing Co., Akron, Ohio—A new folder which explains the construction of the company's Monvent continuous ridge ventilator has been released recently by this concern. Detailed written matter, in addition to construction drawings and a capacity table, are included.

De Laval Steam Turbine Co., Trenton, N. J.—The varied and numerous applications of worm gears in transmitting power from electric motors, water turbines, internal combustion engines, etc., to slow and moderate speed machinery, are shown in a new publication (E-1175) recently issued by this company. The 15-page release is replete with photographs and contains interesting written material relative to the design and manufacture of the worm gears.

Gruendler Crusher and Pulverizer Co., St. Louis, Mo.—An interesting bulletin describing this company's equipment for the pulp and paper and allied industries has been issued lately by this firm. Included in the release are descriptions, written and graphic, of the company's turbo pulp refiner, wood hog and shredder, and straw and waste paper shredder. Also included are illustrations of, and brief written material on, the Gruendler line of coal handling equipment and the company's salt cake and knot shredder. Specifications are included in the bulletin (No. 600).

McLeod & Henry Co., Inc., Troy, N. Y.—A new bulletin on this company's silicon carbide, fire clay and high alumina refractories has been put out recently by this concern. The 11-page release contains photographs and clearly-written material explaining the characteristics and general uses of the products.

Oakite Products, Inc., New York, N. Y.—Modern methods and materials for effectively handling the many cleaning operations connected with the production of uniform quality paper are concisely presented in a new 20-page booklet recently issued by this company. A handy reference manual, the booklet discusses such operations as removal of slime from pipelines, screen plates, head boxes, etc.; washing felts safely on or off; cleaning save-alls and suction boxes, and other cleaning operations peculiar to paper mills.

Permutit Co., New York, N. Y.—A new bulletin (No. 2225) on Permutit pressure filters has just been printed and is ready for circulation. The bulletin contains much interesting data and many photographs of both installation and construction. There is, in addition, considerable space devoted to complete specifications as to capacity, dimensions, length and weight of the filters. The control aspect is also brought out clearly.

Stephens-Adamson Mfg. Co., Aurora, Ill.—A 12-page booklet on the company's new Mosley Mill in which, it is brought out, dry materials pulverize themselves by attrition as a powerful current of air sweeps them around the grinding chamber, has just been put out by this company. There are many diagrams and photographs included in the booklet which make for a clearer understanding of the construction and usages of the product.

Whiting Corp., Harvey, Ill.—An extremely interesting and worthwhile booklet entitled "How To Write a Traveling Crane Specification," has been issued lately by this company. The booklet has been written to aid the crane buyer analyze his specific plant requirements so that he may be able to specify a crane that will exactly fit his individual needs. The booklet covers such points as service requirements, factors to be considered and sample specifications. This publication would be a valuable addition to any industrial library.

BOOKS

Directory of Paper Makers of Great Britain & Ireland (1939)—Marchant Singer & Co., 15 Nicholas Lane, London, England, E. C. 4, has issued the 1939 edition of the Directory of Paper Makers of Great Britain & Ireland. This directory has been published annually since 1877. The present edition, according to the publisher, has been revised in all of its various sections. It is a volume of approximately 300 pages of pertinent information pertaining to the paper industry of the territory included by its title. The book is priced at 5/9 per copy, postage paid, when mailed abroad.

Let Them Live—A dramatic history of safety is portrayed in this book now obtainable from the National Safety Council. The book, written by Stewart H. Holbrook, sketches the development of the safety idea from the early days of the nineteenth century to the present. Picturesque expression is used to show that accidents do not happen but are caused. The book is swift-moving, and has many vivid accounts of events connected with safety. It may be obtained direct from the National Safety Council, 20 N. Wacker Drive, Chicago, for $1.00.

The Finnish Timber and Paper Calendar (1939/1940)—After an interval of about two years the publishers of "The Finnish Timber and Paper Calendar" have issued a new edition, the seventh in succession, of the directory. The new edition has been edited by Onni O. Ojala, editor of the *Finnish Paper and Timber Journal*, in collaboration with other experts of the trade. It is divided into a number of sections, among which is a paper and wood pulp section that treats briefly of the history of the industry, presents export data of the trade, supplies pertinent information on the several trade associations and furnishes data on each of the various pulp and paper mills. There also is a list of Finnish paper and pulp mills arranged according to their principal products; a section giving information on Finland (her forests, economic conditions, banks, railways, etc.,) together with data on the organizations of the woodworking industries, a sawmill section and a section containing various contract forms. Other related data likewise is included. The directory, obtainable from The Finnish Timber and Paper Calendar, Alexandersgaten 36, Helsingfors, is priced at 12 s. a copy, postpaid.

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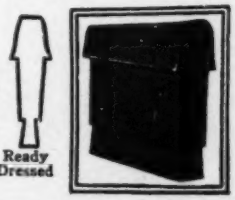

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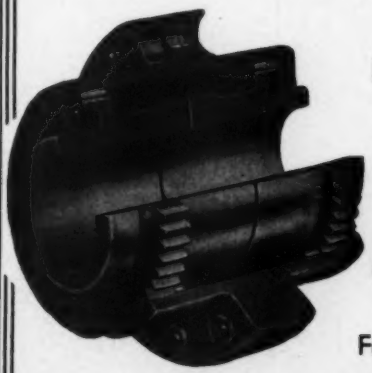

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RAGS (Domestic)
f. o. b. New York City

NEW RAGS

	per cwt.	
Blue Overalls	4.75 to	5.00
Corduroy	2.25 to	2.50
Cottons—		
Washables, No. 1	1.60 to	1.75
Fancy Percales	3.10 to	3.25
New Soft Blacks	3.50 to	3.75
New Light Seconds	1.60 to	1.75
New Dark Seconds	1.50 to	1.60
Khaki Cuttings—		
Mixed	2.75 to	3.00
O. D.	3.25 to	3.50
New Canvas	7.00 to	7.25
New Mixed Blacks	2.25 to	2.50
Shirt Cuttings—		
New White No. 1	6.75 to	7.00
Silesias No. 1	4.75 to	5.00
New Unbleached	6.75 to	7.00
Fancy	1.85 to	2.00

RAGS (Domestic)
f. o. b. New York City

OLD RAGS

	per cwt.	
Roofing—		
No. 1	.95 to	1.00
No. 2	.65 to	.70
No. 3	.55 to	.60
Twos and Blues—		
Repacked	1.35 to	1.50
Thirds and Blues—		
Repacked	1.15 to	1.25
Miscellaneous	1.00 to	1.10
White, No. 1—		
Repacked	2.75 to	3.00
Miscellaneous	2.00 to	2.25
White, No. 2—		
Repacked	1.60 to	1.80
Miscellaneous	1.15 to	1.35

RAGS (Foreign)
ex dock New York City

NEW RAGS

	per cwt.	
New Dark Cuttings	2.00 to	2.15
New Mixed Cuttings	2.00 to	2.25
New Light Silesias	4.15 to	4.35
Light Flannelettes	4.25 to	4.50
Unbleached Cuttings	7.00 to	7.25
New White Cuttings	7.00 to	7.25
New Light Oxfords	4.25 to	4.50
New Light Prints	3.00 to	3.25

RAGS (Foreign)
ex dock New York City

OLD RAGS

	per cwt.	
No. 1 White Linens	7.00 to	7.50
No. 2 White Linens	5.75 to	6.00
No. 3 White Linens	4.25 to	4.50
No. 4 White Linens	3.00 to	3.25
No. 1 White Cottons	3.00 to	3.25
No. 2 White Cottons	2.25 to	2.50
No. 3 White Cottons	1.75 to	2.00
No. 4 White Cottons	1.25 to	1.50
Extra Light Prints	2.00 to	2.25
Ord. Light Prints	1.65 to	1.85
Med. Light Prints	1.60 to	1.70
Dutch Blue Cottons	1.75 to	2.00
French Blue Cottons	1.85 to	2.00
French Blue Linens	2.25 to	2.50
Checks and Blues	1.60 to	1.70
Linsey Garments	1.50 to	1.60
Dark Cottons	1.15 to	1.25
Old Shapperies	1.00 to	1.10

ROPE and BAGGING
f. o. b. and ex dock New York City

	per cwt.	
Gunny No. 1—		
Foreign	1.50 to	1.60
Domestic	1.40 to	1.50
Wool Tares—		
Light	1.30 to	1.40
Heavy	1.40 to	1.50
Bright Bagging	1.30 to	1.40
Manila Rope—		
Foreign	2.60 to	2.75
Domestic	2.90 to	3.00
New Burlap Cuttings	2.35 to	2.50
Jute Threads—		
Foreign	2.75 to	3.00
Domestic	2.75 to	3.00
Strings—		
Sisal	1.75 to	1.85
Soft jute	2.00 to	2.10
Mixed	.60 to	.70

WASTE PAPER
f. o. b. New York City

	per cwt.	
Shavings—		
White Envp. Cuttings	2.25 to	2.35
Ord. Hard White No. 1	1.75 to	2.00
Ord. Soft White No. 1	1.65 to	1.85
Soft White, Extra	2.20 to	2.30
Flat Stock—		
Stitchless	.70 to	.80
Overissue Mags	.60 to	.65
Solid Flat Book	.50 to	.55
Crumpled No. 1	.40 to	.45
Solid Ledger Books	1.30 to	1.40
Ledger Stock—		
White	1.05 to	1.15
Colored	.65 to	.75
New B. B. Chips	.25 to	.30
Manilas—		
New Env. Cuts	1.60 to	1.70
New Cuttings	1.30 to	1.40
Sulphite Wrappers	.30 to	.35
Bogus Wrappers	.22½ to	.25
No. 1 Old Kraft	.60 to	.70
News—		
No. 1 Wh. News Cuttings	1.25 to	1.30
Strictly Overissue	.45 to	.50
Strictly Folded	.35 to	.40
No. 1 Mixed Paper	.22½ to	.27½

CHEMICALS
f. o. b. shipping point

Alum (Papermakers)—		
Lump, cwt.	3.40 -	
Ground, cwt.	3.15 -	
Powdered, cwt.	3.35 -	
Blanc Fixe—		
Pulp, bulk, ton	40.00 to	42.50
Dry, barrels, pound	.0350 to	.0375
Bleaching Powder—		
Drums, cwt.	2.00 to	2.25
Casein (Domestic Standard)—		
20-30 mesh (bags), lb.	10.50 to	11.00
80-100 mesh (bags), lb.	11.00 to	11.50
Argentine, lb.	10.50 to	11.00
China Clay—		
Domestic Filler Bulk (mine) ton	6.50 to	12.00
Domestic Coating Bulk (mine) ton	11.00 to	20.00
Imported (ship side) Bulk (lump) ton	13.00 to	24.00
Chlorine—		
Tank cars (wks) cwt.	1.75 to	1.90
Gelatine (silicin) lb.	.38 to	.44
Glye. (C.P.) drums, lb.	.1260 to	.1300
Litharge, powd., bbl., lb.	.07 to	.0725
Rosin (Gum)—		
New York, 280 lb. barrel		
E, per bbl.		5.45
F, per bbl.		5.90
G, per bbl.		6.30
WW, per bbl.		7.65
Rosin (Wood), per bbl., carlots	4.00 to	6.05
Salt Cake—		
Dom. bulk (wks) ton	12.00 to	13.50
Imp. bulk on dock—(Atl. ports) ton	14.50 to	15.00
Soda Ash—		
Bulk (works) cwt.	.90 to	.95
Paper Bags, cwt.	1.05 to	1.25
Barrels, cwt.	1.05 to	1.35
Soda (Caustic)—Ammonia,		
Solid, drums, cwt.	2.30 -	
Ground and flake, drums, cwt.	2.75	
Sodium Silicate—		
60 deg., 55 gal. drums, (works) cwt.	1.65 to	2.00
40 deg., 35 gal. drums, (works) cwt.	.80 to	1.20
Starch—		
Pearl, 140 lb. bags, cwt.	2.55 -	
Pearl, barrels, cwt.	2.80 -	
Paper (Sp.) bags, cwt.	2.65 -	
barrels, cwt.	2.90 -	
Sulphur (crude)—		
(mine) bulk, long ton	16.00 to	20.50
Talc—		
Dom. 100 lb. bags (mine) ton	14.00 to	18.00
Imp. bulk, ton	20.00 to	40.00
Titanium Dioxide—		
Barium Pig., bbls., lb.	.05½ to	.06½
Calcium Pig., bbls., lb.	.05½ to	.06½
Zinc Sulphide, bbls., lb.	.07½ to	.08½

CHEMICAL PULP
(Air-dry ton)

	per cwt.	
Soda (Dom.) del'd. mill—		
Bleached	2.55 -	
Sulphate (Dom.) f. o. b. mill—		
Bleached	2.25 to	2.50
Kraft No. 1	1.75 to	2.00
Kraft, Southern, del.	1.40 to	1.65
Sulphate (Imp.) on dock—		
Bleached	2.50 to	2.85
Kraft No. 1	1.30 to	1.50
Kraft No. 2	1.20 to	1.30
Sulphite (Dom. & For.) On dock—		
Prime bleached	2.25 to	2.50
Prime easy bleach.	1.90 to	2.10
Prime strong unbl.	1.65 to	1.90

MECHANICAL PULP
(Air-dry ton)

	per ton	
No. 1 Dom. & Can. (f. o. b. mill)	20.00 to	22.00
No. 1 Imp. (On dock)—		
Moist	24.00 to	25.00
Dry	22.50 to	23.50

PAPER
f. o. b. New York City

	per ton	
Boards—		
Binders	71.00 to	77.00
Chip	27.50 -	
Chip, agl. mla. lined	40.00 to	42.50
Coated, white patent .016	60.00 -	
.020 and heavier	55.00 -	
Kraft liner	45.00 to	47.50
News	27.50 -	

	per cwt.	
Book (eased)—		
No. 1 Glossy Coat	11.30 to	12.75
No. 2 Glossy Coat	9.70 to	11.00
No. 3 Glossy Coat	8.60 to	10.00
No. 4 Glossy Coat	8.05 to	9.25
No. 2 Offset	7.45 to	8.50
A Grade M. F.	6.30 to	8.25
A Grade Super	6.55 to	8.50
B Grade M. F.	5.80 to	7.75
B Grade Super	6.05 to	8.00
C Grade M. F.	5.55 to	7.50
C Grade Super	5.80 to	7.75
D Grade M. F.	5.25 to	7.00
Ivory & India	.50 cwt.	extra
Bonds (Rag Content)—		
100% Rag Ext. No. 1	39.10 to	46.00
100% Rag	31.05 to	36.50
85% Rag		
75% Rag	23.60 to	27.75
65% Rag	20.50 to	25.00
50% Rag	17.55 to	21.50
25% Rag	14.65 to	17.75
Regular Colors	1.00 cwt.	extra
Bonds (Sulphite)—		
No. 1	8.60 to	10.50
No. 2	7.70 to	9.50
No. 3	6.75 to	8.25
No. 4	7.00 to	8.50
Colors	1.00 cwt.	extra

	per cwt.	
Glassine (f. o. b. mill)—		
Embossed (25 lb. up)	12.25 -	
Bleached (25 lb. up)	11.25 -	
Unbleach (25 lb. up)	9.50 -	
Greaseproof—		
Bleach. (25 lb. up)	9.25 -	
Unbleach. (25 lb. up)	8.75 -	
Ledgers (Rag Content)—		
100% Rag Ext. No. 1	40.25 to	47.25
100% Rag	32.20 to	37.75
85% Rag	29.90 to	35.00
75% Rag	24.75 to	29.00
65% Rag	21.65 to	26.25
50% Rag	18.70 to	22.75
25% Rag	15.80 to	19.25
Regular Colors	1.00 cwt.	extra
Ledgers (Sulphite)—		
No. 1	9.75 to	12.00
No. 2	8.90 to	10.75
No. 3	8.00 to	10.00
No. 4	8.20 to	10.00

	per ton	
News—		
Rolls (Contract)	50.00 -	
Rolls (Spot)	(nominal)	
Sheets	58.00 -	

	per ream	
Tissues (Carlots)—		
White, No. 1	.82½ -	
White, No. 2	.60 -	
Anti-Tarnish M. G.	.67½	
Colored	.77½ -	
Kraft	.65 -	
Manila	.60 -	
Napkins, semi-crepe (12½ lb. to M shts.) per cs.	.41 -	
Napkins, full crepe and emb'sed (12½ lb. to M shts.) per cs.	.43½ -	
Toilet, Bleached (M shts.) per cs.	5.80 -	
Toilet, Unbleached (M shts.) per cs.	3.25 -	

	per case	
Towels—		
Bleached	3.10 to	3.65
Unbleached	1.95 to	3.30

	per cwt.	
Wrappings (Kraft)—		
Extra Quality	4.75 to	5.25
Super-Standard	4.12½ to	4.62½
Northern Standard	4.00 -	
Southern Standard	3.25 to	3.80
Wrappings (Sulphite and Bleached Kraft)— (Rolls, f. o. b. mill)		
Bleached papers—		
M.F. & M.G. Waxing, 30 lb. (Carloads only)	5.75 -	
(10,000 lbs.)	6.00 -	
Drug wrapp. 35 lb.	6.00 -	
Unbleached Papers—		
Com. Grd. Butch. 40 lb.	4.25 -	
No. 1 Butchers	4.50 -	
No. 1 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	4.875 -	
No. 2 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb.	4.625 -	
Steam Finish, 50 lb.	3.50 -	
Water Finish, 40 lb.	4.25 -	
Manilas—		
Envp. Mla., Sub. 16-40 (No. 1)	4.75 -	
Envp. Mla., Sub. 16-28 (No. 2)	4.50 -	
Envp. Mla. (Prices based on large sheets untrim'd reammarked, in bdls.)		
Wrapp. Mla. 25 lb. up—		
No. 1	5.00 -	
No. 2	4.75 -	
M. G. Sulphite and Kraft (other than Waxing)		
Grade A-25 lb.	5.25 -	
Grade B-25 lb.	4.75 -	